A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes

Manisha Sharma

SN: 0818214

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Abstract

Women with the previous history of gestational diabetes (GD) remain at high risk of developing diabetes which can be delayed or avoided by adopting a healthy lifestyle. Low-risk perception has been recognised as a barrier to the adoption of positive health behaviour. The current qualitative study aimed to explore the risk perception and awareness of follow-up screenings and lifestyle changes amongst the women with a previous history of gestational diabetes, living in the Merseyside area.

Seven women were recruited and qualitative data was collected using face-to-face interviews with the help of a semi-structured interview schedule which was voice-recorded and transcribed for thematic analysis. Eight major themes emerged as the result of data analysis. Five themes provided direct answers to the research questions while the others provided additional relevant information. The findings showed a low-risk perception of developing diabetes in the future. Patients who knew about the risk believed that their risk of developing type 2 diabetes was no different from that of women with no history of GD.

The study highlighted a significant contrast in antenatal and postnatal health behaviour. Women were consulted regarding the immediate effects of gestational diabetes on pregnancy and foetal health and as a result, patients followed the expected health behaviours. However, GD was perceived as a temporary condition and participants were not entirely convinced about the future health risk of developing diabetes.

Participation in postpartum screening was high. However, participants were unaware of annual screening requirements as recommended by NICE

guidelines and they were not offered any post-delivery health intervention or counselling.

This study warrants a need for developing a long-term intervention programme which should include early intervention to prevent initial shock and anxiety during pregnancy, and a long-term follows up incorporating lifestyle advice and a reminder for annual screening.

Declaration

This work is original and has not been previously submitted in support of a Degree, qualification or another course.

Signed Manisha Sharma

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List of Abbreviations

DPP	Diabetes Prevention Program
FGP	Fasting Plasma Glucose
GD	Gestational Diabetes
GTT	Glucose Tolerance Test
HBM	Health Belief Model
IRAS	Integrated Research Application System
NICE	National Institute for Clinical Excellence
NDPN	National Diabetes in Pregnancy Network
NHS	National Health System
OGTT	Oral Glucose Tolerance Test
REC	Research Ethics Committee
R&D	Research and Development office

Chapter 1: Introduction

Gestational diabetes (GD) is a form of glucose intolerance first defined at pregnancy (Savil, 2012) and is associated with immediate short-term maternal and foetal complications. While gestational diabetes resolves usually at childbirth, it increases the risks of developing type 2 diabetes in the future (Hunt, Logan, Conway, & Korte, 2010; Savill, 2012). Research shows that lifestyle interventions can significantly delay or prevent the appearance of type 2 diabetes in this population (Billamy, Casas, Hingroni, & Williams, 2009). NICE guidelines for diabetes in pregnancy (2008, 2014) in the UK recommend that women who were diagnosed with gestational diabetes should be offered lifestyle advice (weight control, diet and exercise) and a fasting plasma glucose measurement at the 6-week postnatal check and annually after that.

The previous history of gestational diabetes is the strongest single population predictor of developing type 2 diabetes (Wilkinson, 2014). Gestational diabetes affects up to 3.5 percent of all pregnancies (McGovern et al., 2014) in England. Moreover, the incidence of gestational diabetes has been increasing rapidly in past two decades (Bentley, Levkoff, Stuebe, & Seely, 2008; Bellamy, Casas, Hingorani, & Williams, 2009). Women with a previous history of gestational diabetes have more modifiable risk factors for developing diabetes in comparison to women without a history of gestational diabetes (Yun, Kabeer, Zhu, & Brownson, 2007). However, most women consider gestational diabetes as a temporary condition, simply a complication of pregnancy (Swan, Liaw, Dunning, Pallat, & Kilmartin, 2010) and do not perceive themselves to be at

elevated risk of developing type 2 diabetes (Kim et al., 2007). This lack of knowledge and low risk perception becomes a hindrance to self-efficacy of adopting and maintaining positive lifestyle behaviour. (Bellamy, Casas, Hingorani, & Williams, 2009).

The area of low-risk perceptions health beliefs and barriers to adopting a healthy lifestyle amongst the women with a history of gestational diabetes has attracted several research initiatives all over the world (Kim et al., 2007; Hjelm et al., 2008; Jones, Roche, & Appel, 2009; Cianni, Ghio, Resi, & Volpe, 2010; Keely, 2012; Lie et al., 2013; Heatley, Middlleton, Hague, & Crowther, 2013; Wilkinson, 2014). International guidelines emphasise on prevention of onset of diabetes in this population by risk consultation and effective health intervention (Wilkinson, 2014). Parsons, Ismail, Amiel, and Forbes (2014) recommend providing women with clear and timely information about the future diabetes risk and offering a feasible and tailored intervention that fits with women's multiple roles.

Some researchers have found evidence of lack of awareness and risk perception in this population (Malcolm et al., 2009; Gordon, Walker, & Carrick, 2013). Whereas, others found adequacy of risk perception but a gap between perception and action due to several reasons such as optimistic bias and lack of time and resources (Kim et al., 2007; England et al., 2009; Nicklas et al., 2011). The difference in findings can be argued due to variation in guidelines and practice. A survey report confirms the wide variability in practice across the UK. The survey also confirms an urgent need for consensus guideline development

for antenatal screening and management of GD both during and post pregnancy (Hanna, Peters, Harlow & Jones, 2007). Lie et al. (2013) acknowledge that in the United Kingdom health care professionals try to balance between reassurance of likely resolution of GD and adequate information about the potential risk of developing type 2 diabetes. High-risk perception of developing diabetes in future is an important motivator in screening and lifestyle modification in women with gestational diabetes (Jones, Roche & Appel, 2009; Zara, Nicklas, Levkoff, Seely, 2013; Parsons, Ismail, Amiel, & Forbes, 2014). Therefore, low risk perception can be a common de-motivator, caused by content and tone of the message delivered (Kim et al., 2007; Lie et al., 2013; Wilkinson et al., 2014). The Health Belief Model (HBM) also supports that risk perception is an important determinant of behavioural change (See Appendix - A2) (Janz & Becker,.1984; Kim et al., 2007).

Therefore, there is an urgent need for studies to find out the actual risk perception and compliance to expected health behaviours in this high-risk population. This qualitative study is designed to explore the risk perception, health belief, and health behaviours amongst the women with previous history of gestational diabetes living in the Merseyside, England. Qualitative data was collected by using semi-structured interviews. The principal research question/objective of this research is -

- What are the risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes in Merseyside, UK?

The secondary research questions/objectives are -

- What is the level of awareness of the high risk of developing diabetes in women with previous history of gestational diabetes?
- What is the level of awareness and involvement in the diabetes screening programme?
- What is the level of awareness and participation in the lifestyle diabetes prevention measures?

Chapter 2: Literature Review

Gestational diabetes has been recognised as the one of the strongest predictors of type 2 diabetes (Wilkinson, 2014). Recent studies show that up to 50% of women diagnosed with GD develop type 2 diabetes within five years (NICE, 2015). The National Diabetes in Pregnancy Network (2013) warns about the rapid increase in numbers of women diagnosed by GD, in the UK. This warrants an urgent need for adequate postpartum follow-up arrangements for GD patients. Regardless of these findings three consequent national surveys and a recent qualitative study have revealed that current recommendations on postnatal follow-up of GD are inconsistent in the UK (Hanna, Peters, Harlow & Jones, 2007; Pierce et al., 2011; National Diabetes in Pregnancy Network 2013; McGovern et al., 2014).

2.1: Postpartum screening

NICE (2008, 2014) recommends a fasting plasma glucose (FPG) screening at the 6-week postnatal check and annually thereafter. In a clinician survey, British Clinical Diabetologists reported that 90% of medical centres in the UK provide postpartum screening and risk counselling (Hanna, Peters, Harlow & Jones, 2007). The reported high rate of postpartum screening was consistent in one more questionnaire survey by Pierce et al. (2011). In this survey primary care physicians reported 80% postpartum follow-up and 39% long term follow up. Another national survey by The National Diabetes in Pregnancy Network (2013) found that 85% of health care providers reported recommending six weeks postpartum screening and 90% recommended annual screening for GD

patients. An absence of a consensus on screening methodology and management of GD was confirmed in all of these surveys.

A recent qualitative cohort study McGovern et al. (2013) has demonstrated a sharp contrast to the above survey results. This study found that in the UK, a very few GD patients received short-term or long-term follow-up. The postpartum follow-up screening rates were also lower than the US and considerably poor in comparison to Australia (McGovern et al., 2013). The results showed no improvement in screening rates after the introduction of (2008) NICE Guidelines. The potential explanation for low compliance was given as follow-up screening not being a priority. Furthermore, an ambiguity between primary and secondary health care responsibilities was also reported (Hanna, Peters, Harlow & Jones, 2007; McGovern et al., 2013).

The variation in postpartum screening results between previous surveys and this study could be possibly due to the methodological limitations. All three surveys were self-reported, and questionnaires were used for data collection. Self-reported studies are often criticised for their overestimated reporting (Smirnakis, 2005; Schenker, Raghunathan & Bondarenko, 2010). Moreover, the results of surveys could be a reflection of the nature of the questions asked. The later study was a retrospective cohort study and data was collected from patient records across England. Using routinely collected data provides greater objectivity but has several disadvantages as well (McGovern et al., 2013). The data used could be pre-dated and incomplete hence providing a distorted picture of the problem. Besides, the sample data for this study was too small to represent the practice all over the UK. During the literature search, a need for further research was evident. Possibly, patient-oriented research to explore

participation in postpartum and follow-up annual screening could add more to present findings and provide a clearer picture.

2.2: Risk perception

High-risk perception has shown a significant influence on the patient compliance of positive post-natal health behaviour (Dasgupta et al., 2013). Regardless, a few studies have shown inconsistency in risk perception and patients' response to it. In a nine-year follow-up study, it was found that one-third of the women with a history of GD believed that their risk of developing type 2 diabetes was no different from women with no history of GD (Malcolm et al., 2009). Another telephonic interview by Kim et al. (2007) revealed an optimistic bias among women with gestational diabetes. 90% of women with a previous history of GD understood the risk but only 16% believed that they have a high chance of developing the disease (Kim et al., 2007). Recent qualitative research conducted in a medical centre in England demonstrated that women were aware of their risk of developing diabetes, but did not act on such knowledge. During pregnancy, these women were motivated to alter their behaviour to benefit the unborn child, but after delivery, these changes were often not maintained (Lie et al., 2013). Although the study revealed a variation in the understanding of future risk, many women acknowledged that they were assured about the risk by the health professionals after getting a normal postpartum blood glucose results. This is to be noted that usually GD patients do not have access to research or other health and medical information. Moreover, these patients do not see any symptoms of the development of the

disease (Swan et al., 2010). Therefore, this is arguable that providing a one off postnatal screening with a brief risk warning may not necessarily be enough to promote risk perception or health action in this population. Besides, an assurance of well-being dilutes the intensity of risk warnings. The need for reinforcement of risk warning with an assurance of proven strategies to help them reduce this risk is crucial (Yun, Kabeer, Zhu & Brownson, 2007; Dasgupta et al., 2013). This is also possible that in spite of having a risk perception, patients do not have sufficient awareness of the required actions to reduce the risk.

2.3: Intervention

Hjelm, Berntrop, Frid, Aberg and Apelqvist (2008) and Torloni et al. (2009) emphasise the importance of risk and lifestyle counselling for GD patients, immediately after initial diagnosis and then repeatedly over the years. Moreover, they suggest recognising the importance of the context of information, because it influences the beliefs and attitudes of women towards GD either as a transient condition during pregnancy or as a potential risk factor for developing diabetes in the future (Hjelm, Berntrop, Frid, Aberg & Apelqvist, 2008). NICE (2008, 2014) recommend a lifestyle advice including weight control, diet and exercise, but it does not specify when and how. Long-term lifestyle intervention is not mentioned in the NICE (2008, 2014) guidelines.

There is a well established direct relationship between adoption of a healthy lifestyle and preventing type 2 diabetes in this high-risk population (Knowler et

al., 2002; Kim et al., 2011; Feig, 2012; England et al., 2009). Finnish Diabetes Prevention studies noticed a significant reduction of DM risk by intervention. A follow-up also identified sustained lifestyle changes and reduced incidence of diabetes in the prevention group (Lindstrom et al., 2006). Similarly, in the diabetes prevention programme (DPP) intervention group received counselling on diet, exercise, and behaviour modification during the 3-year study. As the result of participation in the prevention programme, their risk of developing diabetes was reduced by 58% (Knowler et al., 2002).

Positive health results of these intervention studies provide a good reason for developing long-term intervention programmes for GD patients. However, both of these studies were conducted in other countries and what worked there might not work well in the UK. Hence, a similar study to find out the best financially viable intervention strategy in the UK could be beneficial.

2.4: Overcoming barriers

Evidence shows that women are positive about long-term support for self-management, but they encounter some barriers in their quest to self-manage their condition (Dasgupta et al., 2013; Lie et al., 2013). Major barriers to lifestyle changes were reported to be time, financial constraints, lack of family and social support, variations in risk perception, exercise beliefs, and disparities in access to healthcare (Ratnakaran, 2009; Lie et al., 2013). Health care providers need to consider all of the barriers (Janeen, 2013) and develop targeted educational resources for effective intervention programmes (Carolan, Gill & Steele, 2012).

A critical review by Janz and Becker (1984) reviewed 46 studies and recommended Health Belief Model (HBM) be used for designing intervention programmes. Some more recent studies have also supported the incorporation of the HBM in intervention programmes, to understand and address barriers. (Kim et al., 2007; Jones Roche & Appel, 2009; Hivert, Warner, Shrader, Grant & Meigs, 2009; Zara, Nicklas, Levkoff & Seely, 2013).

The HBM explains how high perceived risk is an important factor in an individual's decision to adopt and sustain preventive behaviour (Janz & Becker, 1984). The model further illustrates that a person will only adopt health behaviour if they believe that they are susceptible to a disease, understand that the consequence of disease could be serious and believe that they can avoid the occurrence of disease by adopting certain health behaviour. The model also explains that a person is more likely to apply positive health changes if they believe that the benefits of taking action to avoid a health threat exceed associated barriers (Janz & Becker, 1984).

The incorporation of HBM in follow-up intervention programmes should be further evaluated because some previous studies have shown that high-risk perception is not necessarily a predictor of the adoption of positive health behaviours (Kim et al., 2007; Lie et al., 2013). These studies are inconsistent with HBM. However the argument against the above studies could be that the first study by Kim et al. (2007) was conducted at one point in time while ideally, perceptions of risk and reports of behaviour should be collected longitudinally

(Kim et al., 2007). The second study, on the other hand, was a qualitative study, and the findings were self-reported. The reported health behaviours in these studies could be indicative of 'future plans to improve health behaviours' or 'recall of recent behaviour changes' and might have been affected by a social desirability bias.

2.5: Recommended actions

The recommended health behaviour for women with a previous history of GD includes postpartum blood glucose screening, breastfeeding, weight loss, minimum 30 minutes of physical activity every day and choice of healthy diet (Alberti, Zimmet, & Shaw, 2007; Feig, 2012; Ferrara et al., 2011). However, communicating and reinforcing these recommendations with a minimum financial burden on health care system is a massive challenge for health care providers. Health professionals have acknowledged that financial implication of opting for this recommendation act as a barrier (National Diabetes in Pregnancy Network, 2013).

NICE uses a cost-effectiveness model to direct the guideline recommendations. Despite this, recently revised NICE (2015) has also recognised the need for a quasi-randomised control trial to find an active intervention programme for GD. The increased numbers of GD patients means an increase in the numbers of potential diabetic patients. This alarming rise can pose a massive economic burden on the NHS beyond its capacity (National Diabetes in Pregnancy Network, 2013). This threat warrants more research to find the economic,

affordable and efficient intervention and a uniform policy to imply it throughout the country.

In a retrospective focus group study, participants expressed interest in an internet-based lifestyle intervention that they could access on their schedules (Nicklas et al., 2011). In a randomised clinical trial to evaluate the effectiveness of prevention methods, Ferrara et al. (2011) found that telephone intervention has the potential to be adopted in most settings and it can actually inform policies to promote the prevention of diabetes among women with GD. Australia established a National Gestational Diabetes Register in 2002. Participants receive regular online reminders to have diabetes checks and health information to continue a healthy lifestyle. (Heatley, Middleton, Hague & Crowther, 2013). This system improved the patient participation in postpartum screening to 73% in 2003. Following a national survey, National Diabetes in Pregnancy Network (2013) has also recommended for developing an online forum with education material for GD patients in the UK. They have advocated for developing a reminder system for postpartum follow-up through sending emails.

However, this can be argued that using electronic media can have some concerns as dependency on electronic media, access to equipment, the capability to use that equipment, motivation to follow the advice and test the suggested methods before implying them nationwide. Research shows that the efficiency of systems changes with time and circumstances. For example, a considerable variation in the rate of recruitment of eligible women to the

Australian GD register was noticed from 72% in 2003 to 27% in 2006 (Heatley, Middleton, Hague & Crowther, 2013).

Parson, Ismail, Amiel & Forbes (2014) advocate offering individualised face to face counselling and intervention that fits with women's multiple roles and focuses on the health of the patient and her whole family. Although, attending a regular face-to-face session requires integration of childcare because childcare responsibility is a major barrier to attendance, particularly if both the partners are participating. (Dasgupta et al., 2013).

The final argument is that significance of finding an effective diabetes prevention method is crucial because the "population in question is one of the young women of childbearing age". Prevention of diabetes in this population will have considerable implications for these patients, their children and society in general (Ratnakaran et al., 2010).

Chapter 3: Methods

3.1: Approach and Rationale

The aim of this study is to explore the risk perceptions, health beliefs and health behaviours in women with a history of gestational diabetes. This includes patients answering certain research questions driven by the researcher's analytic interest. Bloom and Crabtree (2006) suggest qualitative interviews to explore the meanings and perceptions to gain a better understanding. Denzin and Lincoln (2000) also support the notion that qualitative research encourages the interviewee to share rich descriptions of the phenomena. Perceptions and beliefs are subjective, and qualitative data provides the researcher with the means of understanding the world through the eyes of participants (Patton, 2002).

As cited by Morse (2015), McIntosh & Morse suggest semi-structured interview for gathering more information on a topic which is partially known but needs more exploration to answer particular questions. Therefore, to address the aim of this research and respond to research questions, a semi-structured qualitative research method was chosen and data was collected through open-ended interview questions. This gave participants the freedom to respond to each question in their way, and the researcher could use probes to obtain additional information.

3.2: Ethical approval

Following Silverman's (2005) suggestion, great attention was paid to the ethical issues involved. A research proposal was constructed (See Appendix-B). Ethical approval was requested by the NHS Research Ethics Committee (South Hampshire B) and Research and Development office (The Royal Liverpool and Broadgreen University Hospital, NHS Trust) by filling in an integrated research application form via the NHS IRAS system online. The research process started after ethical approval was granted (See Appendix - B1 & B2).

3.3: Recruitment

A member of the patient's clinical care team (antenatal diabetes care team at the Royal Liverpool University Hospital) accessed the patient records to identify potential participants and check if they met the inclusion criteria. Twenty English speaking women, living in the Merseyside area, aged between 18 to 40 years (at the time of pregnancy) with a previous history of gestational diabetes mellitus were selected. These women had attended an antenatal diabetes clinic at Liverpool Women's Hospital after 1st April 2008 and before 31st March 2012. Women who were pregnant at the time of recruitment or were diagnosed to have Type 2 diabetes were excluded from the study.

Patients' GPs were approached to check the well-being of mothers and their offspring before contacting the participants. Invitation letters, information sheets

and permission slips (See Appendix - C1, C2 & C4) were sent out by the diabetes department to attain permission for the researcher to contact the participants for recruitment. Participants were provided with a self-addressed prepaid envelope to send their reply in two weeks time. A reminder was sent to any prospective participant whose response was not received in two weeks time (See Appendix - C5)**.** The participants were provided with plenty of time to think and decide about their willingness to participate in the study. The consent forms were signed before the commencement of interviews (See Appendix - C3).

Nine permission slips were returned. Following that, the researcher contacted participants to invite them for a one to one interview. During the pre-interview briefing conversation, two patients were found to have been diagnosed with type 2 diabetes and they were excluded. The remaining seven patients were included in the study. Seven was considered to be an adequate number of participants for the purpose of efficient data analysis because qualitative research designs work with a relatively small numbers (Silverman, 2005). It was decided that we stop interviews after new themes stopped emerging at the point of data saturation (Rubin & Rubin, 1995; Marshall, 1996).

After recruitment participants had been again asked for verbal consent before starting the interview and it was clarified that if they wished they could withdraw at any point during the interview (Silverman, 2005) (See Appendix - D1). Participants were assured that the information collected during the interview would be kept strictly confidential. Only the researcher carrying out the research and their supervisor will have access to such information and Individuals who

participate will not be identified in any subsequent report or publication (Silverman, 2005) (See Appendix - D1).

3.4: Data collection

All interviews were conducted at the Royal Liverpool Hospital in the Diabetes Department over the period of three months. The whole process was very flexible and arrangements were made to resume interviews at times more suitable and convenient for the participants considering that childcare and other commitments of mothers with young children can be a barrier to participation (Ritchie & Lewis, 2006). Room was booked specifically for the purpose of interviews. All of the participants were welcomed and thanked for their agreement to participate and they were verbally introduced to the research aims and interview procedure to develop a positive research relationship (Ritchie & Lewis, 2006). They were also assured of the confidentiality and anonymity. Consent forms were signed and each participant was given her copy to take with her (See Appendix - C3). A semi-structured interview was chosen because it is the most common method to collect qualitative data when interviews provide the sole data source for a qualitative research project (Bloom & Crabtree, 2006). A semi-structured interview was used as a guided conversation, organised around a set of predetermined, open-ended questions as an Interview Guide to initiate and stimulate the conversation (Bloom & Crabtree, 2006) (See Appendix -D1). The interviewer intentionally kept her responses to a minimum, occasionally paraphrasing or reflecting and letting

other questions emerge from the dialogues between interviewer and herself. (Baron & Byrne, 2004; Rubin & Rubin, 1995).

All of the Interviews were voice recorded to be transcribed with the participants' consent. All participants were thanked for their time and contribution. Interviews were stopped once new themes stopped emerging and an acceptable interpretative framework was constructed after the stage of thematic saturation after seven interviews (Marshall, 1996). Morse (2015) suggests an inverse relationship between the numbers of participants and amount of data collected from each participant. Following the suggestion, small numbers of participants were recruited to collect rich data through open-ended questions.

3.5: Data analysis

Following the guidelines of Braun and Clark (2006, 2013) thematic analysis was adopted for data analysis because it is a simple, straightforward and flexible method to analyse qualitative data. Moreover, the thematic analysis does not "prescribe" any methods of data collection but only provides a data analysis method to produce "rich and detailed, yet complex" accounts of data (Braun & Clark, 2006).

The data collected from around 400 minutes of interviews was transcribed (Braun & Clark, 2006) and the initial thoughts and ideas were noted down as an essential start for research analysis (Riessman, 1993). The raw interview data was very rich and detailed, around three to six A4 size papers for each interview

(See Appendix - D2). All the collected data was coded so that it could be looked back on in subsequent phases (Braun & Clark, 2006) (See Appendix - D3). This study has been designed to answer set research questions by detailed analysis of some aspects of the data for finding specific answers. There was an 'engagement' with previous literature before data analysis. Data analysis was done by a meaning search across the whole data finding semantic themes and extracting meaning through repeated patterns (See Appendix - D4). Therefore, this research project predominantly suited theoretical and experiential paradigms. However, Braun and Clark (2006) acknowledge that there is no hard and fast rule for choosing suitable paradigms and different combinations are possible. The purpose of this research was to find out participants' experiences and the meaning they attach to them to build their perceptions. It was impossible to separate or isolate experiences, perceptions and meanings from the impact of wider social contexts on those meanings. Therefore, instead of choosing any one paradigm a mixed approach was applied for the analysis. A blend of theoretical, experiential and constructionist approaches was used to find out both explicit and surface meanings of the data as well as the underlying ideas and relating them to previous theories for better analysis and conclusion (Braun & Clark, 2006).

A combination of data driven, 'bottom up' and a 'top-down' approaches were applied to identify the semantic themes and also to explore more theoretical ideas or latent themes. The analysis involved a constant 'moving back and forward' between the whole data set. The writing was continued through the

entire coding and analysing process (Braun & Clark, 2006; Braun & Clark, 2013) (See Appendix - D2, D3 &D4).

Thematic analysis was undertaken to identify, analyse and report the patterns and themes within the data in six phases (Braun & Clarke, 2006). The first phase was familiarising with the data by repeated reading and then transcribing the data. It was realised that "immersion" in data by repeated active reading, searching for meanings and patterns was an essential part of data analysis and possible patterns shaped out throughout the process (Braun & Clark, 2006; Braun & Clark, 2013). In the second phase of coding potential codes and patterns were highlighted in the transcription and a list of codes were made. Data relevant to each code was collated in meaningful groups and individual extracts of data were coded to fit in as many themes as possible (Bryman, 2001) (See Appendix - D2, D3 & D4).

The third, fourth and fifth phases included sorting different codes into potential themes, reviewing the themes, refining and generating a thematic map of the analysis, and defining and naming the themes (Braun & Clark, 2006; Braun & Clark, 2013) (See Appendix - D3 & D4). The sixth and final phase of producing a scholarly report of the analysis started after collating a set of fully worked out themes. This phase is reported in chapter four and five as results, discussion and a conclusion. A concise, coherent, logical story of all the collected qualitative data has been provided in this phase (Braun & Clark, 2006; Braun & Clark, 2013). A reflective journal was maintained for research records at all the stages of research (See Appendix-E1, E2, E3 & E4).

Chapter 4: Findings

Open ended, semi-structured interviews generated very rich data. There was around 1,300 to 3,500 words of data transcript for each interview. Each transcript represented 40 to 60 minutes of interview with an individual participant. Transcribed data provided a good insight on patients' experiences and understanding related to Gestational Diabetes (GD) and their risk perception for developing diabetes in the future.

This study is driven by an analytic interest to explore different aspects of the data for finding answers to the set research questions. Therefore, relevant themes have been extracted, grouped and sub-grouped to answer the research questions. The main themes are categorised and labelled as headings and sub-headings. There is an overlap of concepts across these categories and themes within the data. Consistent with qualitative data analysis, experiences, understandings and perceptions are interconnected and related to each other.

The interviews started with an exploration of participants' experience related to the diagnosis of gestational diabetes. Feelings associated with diagnosis emerged as the first theme. Information about feelings associated with diagnosis did not directly answer a research question but it helped in comparing patients' reactions to the diagnosis of GD to the postnatal screening results. This also provided insight into the reasons for patients' action towards avoiding the risk of developing diabetes in the future.

4.1: Feelings associated with diagnosis

Most patients reported getting health information and risk warnings related to the immediate effects of GDM both for the mother and unborn child. The information caused a lot of mental and physical stress for the majority of patients. The stress of following a regular medication schedule followed by insulin injections three or four times a day at a later stage became a contributory factor to anxiety. Some patients were on insulin right from the beginning and injecting four times a day was a painful experience. A few experienced inductions and caesarian sections.

“Concerned for my health and of the baby”

Anxiety associated with diagnosis was an immediate response of all the participants with some participants feeling more anxious than others.

> “Very concerned, concerned for both my own health and of the baby. I have diabetes in my family. Type 1 and type 2. So knew probably more than most but still very concerned, especially for my unborn child. I didn’t know very much about gestational diabetes but knew quite a bit about type-2 diabetes. When I was first diagnosed having gestational diabetes, I didn’t understand what the concerns were with my unborn child and I wasn’t given an awful lot of information”.
>
> “I did see a consultant after quite a number of weeks or it felt like a long time but it probably wasn’t but for me as a worried and concerned pregnant mum it just looked like a long time".

She continued about other immediate risks warnings which included possible risks to the baby and her delivery.

> “More about the size of the baby and my weight. They said I will have difficulty giving birth. I had more scans than usual. They did mention once about the risk of still birth and that’s why they wanted to induce me and when they talked about inducing me they talked more about the fact that the baby would be more weight near the end of pregnancy. So to make sure that baby wasn’t huge size they would deliver me four weeks before the actual time”. (Patient 1)

Along with the mental stress, physical stress was caused by regular sugar monitoring and alternative option of elected delivery-

> “I had to do the four times finger pricks. I got extra scans and ended up being induced. I had two failed inductions and a caesarian finally.” (Patient 3)

"Diabetes means that you are unhealthy"

A few other participants expressed their disappointment because the news came unexpectedly when they were expecting a healthy pregnancy and a normal delivery. They could not understand the reason for the sudden occurrence of this condition and the associated risks. The news caused feelings of guilt and disappointment as participants thought that they were being held responsible for self-inflicting GD due to their unhealthy lifestyle.

"(Errm) Actually, I felt very disappointed because I am quite a healthy person so I took it as a bit of personal insult. I just automatically thought that diabetes means that you are unhealthy and I didn't know at the time and nobody explained it to me that it was related to hormones as well. I just thought it was something I was doing wrong. So Yah, I was quite disappointed really." (patient 5)

Another participant added, "I thought, I was going to Slimming World that's why I was very shocked that I had gestational diabetes." She continued "It got worse so they ended up putting me on the tablets. That upset me as well because I was really strict with myself but it just kept getting worse."(Patient 7)

"I was misdiagnosed"

One particular participant, who was a borderline was convinced that she never had it. As a result, she felt frustrated as possibly misdiagnosed. She left the hospital in confusion after her delivery.

"I am probably a bit of a misnomer in the whole process of gestational diabetes. I came in to take part in a study and I was diagnosed at thirteen weeks.(erm..) Subsequently, I found out that I was actually borderline and possibly should never have been given that diagnosis."

She further said, "I feel a bit cheated because I actually don't think I had it. (Pause) I felt like I was misdiagnosed and it was overzealous nurses that gave me the diagnosis when I should not have been." (Patient 3)

4.2: Risk warnings and health information

It was apparent from the interviews that majority of participants received risk warnings and health information but there was inconsistency in risk perception and health beliefs. The level of satisfaction with the received information and risk warnings also varied. Some participants reported receiving useful information and good care after diagnosis whereas, others found the information confusing and inconsistent with their experience.

"They then looked after me"

"At the time I didn't know anything, I had no understanding. I didn't know what the risks were but obviously having been diagnosed, they then looked after me at the Liverpool Women's Hospital very well. I had an appointment every week. I had to change my diet, I had to prick my finger before every meal to test the blood and my understanding became that really it was just very similar to normal diabetes. The same things that people who have diabetes have to do, I had to do except for there were higher risk of complications at the end of pregnancy." (Patient 2)

"A pretty basic knowledge was given to me"

“It took about ten days till I got to speak to somebody about gestational diabetes and to give me the equipment to measure my blood glucose. This was quite a worrying time for me. Once I saw the diabetic clinic and again a pretty basic knowledge was given to me obviously to cut on sugary food. I found information with controlling diabetes quite confusing.”

“After about six weeks they said I need to go on metformin. I was pretty disappointed at that point. They didn’t explain to me why? Even though I was controlling my blood sugar. I was on metformin for six weeks and they said I need to go on insulin. I was very disappointed and concerned about being injected and I asked them what data they had to support with a research that it’s OK to for a pregnant woman to have it. I was worried and wanted to see the information to make sure that I am doing the right thing for my child. In the end they induced me six days earlier than the date I was given for inducing.” (Patient1)

“It was stressful, unnecessarily to be honest”

“For me it was a little bit confusing because the things they told me were, your baby could be very large and ‘we would like to induce you two weeks early because your baby could be very large’.” I am not a large person and my bump was not large so I trusted what they told me but I didn’t feel that it applied to me. I didn’t feel too concerned because what they were telling me didn’t seem to resonate with my experience.” (Patient 2)

"It was stressful, unnecessarily to be honest, because my baby was born without intervention. I was told the baby would probably be overweight, more than 10 Ib and that I would have to give birth in the medical unit. My baby was 7Ib and she was born in the pool. It was all just a bit of medical stress at the end (laugh)." (Patient 5)

"Dangers of going on the internet"

A few self-reliant patients tried to research and found more information on the internet but felt the information was unreliable and out of proportion.

"No, when I first got the diagnosis I was obviously really shocked and I said to the nurse who had taken the blood what can you tell me about the condition. She said 'I don't know I just do the tests' and then handed me some photocopied sheets and that was it. Obviously, I went online and looked up as much information as I could then but the dangers of going on the internet there is always 'you will die' or 'the baby will die' and so that is only useful up to a point and pretty scary. So, it was only really when I saw the nurse for the first time here that I was able to know a bit more about what the condition actually would be, and that it would likely go after my pregnancy (erm...) but that I might have a higher likelihood of developing diabetes later in life. Yeh... that was what I understood. (Patient 4)

Despite receiving medical care and risk warnings, most participants showed dissatisfaction with the content and amount of the information provided.

Participants reported that the information was either too basic or alarming and confusing.

4.3: Post-natal screening

All but one of the participants remembered having a postnatal blood glucose test after a few weeks of their delivery. Surprisingly, no one reported having any repeated blood glucose tests or Glucose Tolerance Tests (GTT) after the first postnatal screening.

"I didn't have it any more and that was the end"

"When I was discharged, I had a little letter that said you should be tested for diabetes in six or eight weeks about after having a baby. So I made an appointment to go and see my GP and there I was being told to go for a postnatal check up and also a blood glucose level check to make sure you know it's gone and not turn into diabetes type 2. So I had the test and it resulted fine. They have never called me for a test since then." (Patient 1)

She also added -

"I had my son (name) in 2011. Last year which is 2014, I asked for a test. I have never been called since. Last year, I felt lethargic and tired so I got it checked but nobody has ever called me. I thought to get checked especially when my sister developed diabetes she was around about the same age. She was in her early forties so I thought it's wise to check it anyway." (Patient 1)

Other participants also confirmed a similar experience.

> "I think I just went one time six weeks after but never had to go back again. I guess if I was to fall pregnant again then they would test me quite early but I am not planning on having any more children so they have never asked me to come back." (Patient 2).

This was followed on with other participants-

> "They just did a blood test straight away. It was really soon after I had my daughter and they said I didn't have it any more and that was the end."

And for the follow-up screening participant's response was –

> "None, I haven't had any since it went from that pregnancy and I had a test. I haven't had any follow-up. The only time I did, I got pregnant again and I obviously went to have a glucose tolerance test and it came back negative so that was that." (Patient 4)

One participant who was not sure if she'd had any post delivery screenings was asked if she knew her status about having diabetes and she was not sure about that either. Her response was-

> "It was so long ago now I can't remember" (Patient 7)

The interview data confirmed that patients were never contacted or reminded for a repeated screening and they did not have any records with them to confirm their status on screenings.

4.4: Follow up health advice and intervention

Some participants reported getting a future risk warning and health advice about the possibility of developing type 2 diabetes but the content and source of information was different for individual participants. Quite a few received a one off risk warning from a dietitian, consultant or diabetic nurse during their pregnancy. Some others reported getting a future risk warning from a GP during the postnatal check-up. However, no one reported getting any follow-up information or intervention after their first post delivery check up so patients didn't take that one off warning seriously and believed that they no longer had health issues.

"didn't necessarily mean so much"

> "Nothing was advised. The test had come back negative. I was signed off. I am sure they informed my GP. They did say if you have had gestational diabetes you are at higher risk of developing diabetes in later life. They told me that but I'm sure with anybody if their diet is unhealthy then anyone is at risk of developing diabetes so it didn't necessarily mean so much. I was just relieved that I didn't have it anymore. " (Patient 2)

"I have returned back to normal"

> "I did see a dietitian a couple of times throughout the course of pregnancy. I think my GP did a follow-up but I developed another health

issue after I had my son although I think I had it before an underactive thyroid (erm...) so that kind of took priority and then everything was normal with regards to diabetes." (Patient 3)

"I was told by my doctor that I no longer have gestational diabetes so I was quite happy and I know that I have returned back to normal now but I do remember that I needed to stay healthy, do regular exercise because I don't want to develop Type II diabetes." (Patient 6)

"It's my own research and my own information"

Some self reliant patients acquired more information through the internet, health related jobs or from family members –

"No, it's my own research and my own information but nobody ever actually furnish me with the information, no." She also added "My sister and my dad are both type 2 diabetic and my grand ma was type 1 diabetic and we have diabetes in both paternal and maternal side of my family. So I am quite knowledgeable about how to control diabetes with healthy diet" (Patient 1)

A participant who worked in the media credited her job and education background for her knowledge on healthy life style.

"I guess I'm interested in being healthy and I think it is an individual's responsibility to keep themselves healthy and I want my children to be healthy. I have done dancing for most of my life so I guess I understand looking after your body and keeping your body working properly. (Erm...) I

think educated people do have a good understanding of a healthy lifestyle. I also work in media so I am absorbing those messages, I am aware of health issues especially in this city that there are huge incidences of heart disease, diabetes and cancer and I guess once you are reading about those you are aware of what can cause them. ” (Patient 4)

Some others looked for health information on the internet.

“It is basically what I have read because the only information I got at the time was all about the birth and because I was 37 weeks and how it was going to impact on that but I wasn’t really given future advice or future follow ups. (Erm a short pause) I did go back for a fasting glucose test when my child was a few months old and it was fine but they didn’t give me any future advice. Anything I know I’ve just what I have read online.” (Patient 5)

Another participant followed-

“My doctor informed me about things on gestational diabetes but after I had it, I looked on the internet on how to make changes.”

“I can’t recall anyone talking me through it maybe once but if you’re talking about counselling then nothing like that not really, no.” (Patient 7)

4.5: Risk perception of developing diabetes in the future

Inconsistencies in delivered health advice and risk warnings were reflecting on participants' risk perception of developing diabetes in the future. A variation in

the level of perception and attitude towards the risk was observed. Quite a few participants knew that they had a risk of developing diabetes but were not sure about the possibility of avoiding or delaying the risk or the required actions to avoid or delay the risk. Some others, on the other hand, were told about the risk but they didn't take it seriously as they believed that their risk was the same as any other woman even without a history of GD. There were also some participants who were not aware of the risk at all.

"Nobody ever told me anything"

> "I believe I am at high risk of developing type 2 diabetes after having gestational diabetes but that's my belief. I don't know whether it is true or not. I believe I am at high risk of developing type 2 diabetes for a number of reasons. Got a lot of type 2 diabetes in the family, due to my weight and I am aware of the risk factors".

When this participant was asked about her source of information, she replied-

> "Nobody said that I am at a high risk. Nobody said that I should be tested on a regular basis. They just said you are not diabetic now. It's just my following it through really giving assurance that I am not at the moment but don't know what to do just to find it but regards to any other risk factor nobody ever told me anything." (Patient 1)

"Anybody with unhealthy diet is at risk"

There was evidently a huge variation in participants' health beliefs as well. Participants reported getting a one off risk warnings but it did not necessarily increase their risk perception because they were not sure about the reason for this increased risk and could not associate GD with the increased risk of developing type 2 diabetes.

> “They did say you are at high risk of developing diabetes in later life and gave me some very good leaflets but I am sure anybody with an unhealthy diet is at risk. So it didn’t necessarily mean so much. I was just relieved that I didn’t have it anymore.” (Patient 2)

"I am at as much risk as anyone else"

> “I don’t know to be honest because my mindset has been that once the pregnancy is over (pause...) I am at as much risk as anyone else and, therefore, the healthy eating messages and all of those things will be the same but I don’t know if that is true.” (Patient 4)

Another patient replied about risk factor-

> “I don’t know. I know you can develop diabetes through pregnancy there is a big chance especially if you are overweight that is a big factor.” (Patient 7)

But when she was asked if she saw any connection between gestational diabetes and diabetes the reply was-

> "No, I don't think so. You can get gestational diabetes when you are pregnant but with diabetes, I don't see any connection." (Patient 7)

Participants could not see any connection between gestational diabetes and developing diabetes in the future. Therefore, despite receiving health warnings they did not see GDM as a future threat to their health. They perceived GDM as a temporary health condition and after their first antenatal screening, they were relieved to know that they no longer had it. A few others showed awareness of required lifestyle changes but in most cases this knowledge was self-acquired and participants were not very confident about required actions.

> "I understand that there is a risk but there is a genetic risk as well because my mum has got Type II diabetes." (Patient 3)

She was then asked if she thinks that it is possible to reduce the risk of developing diabetes -

> "You can manage even if you are given the diagnosis of diabetes. You can also manage it quite effectively with diet so there are options; it is not always about medication so I think if you get it, you get it but you have got to be sensible but I am trying to do what I can to stop me getting it." (Patient 3)

4.6: Health awareness

Some participants showed a fairly good understanding of a healthy lifestyle. This included healthy eating, controlled alcohol intake, smoking hazards and

increased physical activity. However, most of the information was self-acquired by participants and some statements were very vague. This interview has provided just a short overview of participants' health awareness and these findings were not sufficient for reflecting on participants' overall understanding of positive health behaviours.

“I think I’m pretty aware of what a healthy lifestyle means”

> “Even though I am overweight, I do eat a very healthy diet, I still try to follow low GI where possible because I know it lows the sugar down and you know a healthy diet. I am aware of the risk factor. I will say, I still follow the low GI diet, I do eat sugars, I obviously feel like I deny it but then I go a bit crazy afterwards so I do allow myself the sweet things that could not allow in gestational diabetes but still my main meals are low GI food. I follow myself really just try and control it. I try to be more active but I struggle on that.”

She was then asked about her understanding of low GI diet and she replied-

> “Obviously, I make food quite a lot so white rice with brown rice, pasta with brown pasta instead of big large white potato. I understand that obviously if you have if you are eating very high sugar if you got a lot of fat then it's gonna' damage.”

> “I don't do heavy drink anyway, I don't smoke, lots of activity, lots of fresh air, lots of good vitamins and food, balanced food obviously not too fatty or

lots of carbs. I just you know care about mental aspect as well, mental health." (Patient 1)

Other participants also gave a brief description of their understanding of healthy lifestyle as follows-

"For me it is taking some exercise every week, I try to go to the gym two times a week. I am busy with the children anyway never really sitting down. For me eating is something I love to do and if I am trying really hard to kerb my eating I will cut out sugar is quite important and I am very aware because of the diabetes that I am at higher risk. I try to keep the processed sugar to a minimum if possible. I think I eat a normal diet. We eat fresh fruit and vegetables in the week but also have takeaways and eat out. I wouldn't say I'm particularly healthy but I am not on the far scale." (Patient 2)

"To eat a healthy balanced diet. If you need to have a treat don't deny yourself but have it in moderation and make sure you do plenty of exercise as well. Just to make sure that you are healthy, eat plenty of fruit and vegetables and fruit if you crave something sweet as opposed to reaching for that chocolate bar look for other alternatives that you like but keep active and try and watch what you eat." (Patient 3)

"I try and have five fruit and vegetables per day. I exercise as much as possible and I don't smoke. I really rarely drink anymore since having

children but when I was younger I did used to enjoy a lot of alcohol but since becoming a parent nearly four years ago for the first time, I really haven't drunk. I try and exercise, I walk everywhere quickly. I am a vegetarian and have a very healthy diet; I haven't got a sweet tooth. I do like biscuits occasionally and (erm...) but that is my only vice. I think I'm pretty aware of what a healthy lifestyle means. I take vitamin supplements every day. I think I try and be as healthy as possible within the boundaries of what is realistic."(Patient 4)

"(Erm, a pause for thinking) I would like to think I do have a healthy lifestyle so I exercise, drink moderate alcohol, I don't smoke. (erm,) Ideally, I don't have any alcohol but I just line a little bit (a laugh) but I don't drink a lot maybe a couple of units every few weeks. Exercise I probably do five days per week and eating healthily." (Patient 5)

"I understand that a healthy lifestyle is a good balanced diet, not too many carbohydrates, not too much greenery but it is to have a good balanced diet and to exercise regularly." (Patient 6)

Most of the patients received healthy lifestyle advice during their pregnancy so they tried to remember and follow whatever they were advised at that time. Some others tried to acquire more information from different possible resources but none of the participants reported involvement in any postnatal health education, intervention or counselling.

“Haven’t made any changes”

When asked about lifestyle changes, a variation in attitudes and actions was noticed. Some patients didn’t make significant changes to their lifestyle because either they didn't have information or they considered their lifestyle to be healthy.

> “I haven’t made any changes as a result of having it. The changes come because my children have got older and it is easier for me to go out and exercise and cook healthy. If somebody had given me more information and I was more aware, possibly I would make other changes but I have not had that information so I am just carrying on as normal.” (Patient 2)

Another participant acknowledged not making any changes after delivery; she added that her lifestyle before her pregnancy was the same and the reason for not making any changes was given as-

> “Yes I believe that my problems were as a result of my thyroid, the weight gain that I had and being overweight when I got pregnant.” (Patient 3)

A few others reported that -

> “In terms of my diet and my attitude I think everything is the same apart from the only difference is that I don’t drink. I used to have a glass of wine most evenings but now I hardly drink.” (Patient 4)

“It was the same as always. That was why I took it so personally and was so insulted because I didn’t understand it and I thought it was related to lifestyle initially because I have always been a member of the gym and I do think I have a healthy diet.”

“To be honest, I am just more aware of it and I will probably maintain healthier habits but nothing significant because I wasn’t overweight, I didn’t smoke, I ate well and exercised before so I think I am a bit of an anomaly in that way (laugh).” (Patient 5)

"Wouldn’t really want to get type 2 diabetes"

Some patients accepted that they needed a change and they were trying to adopt a healthy lifestyle. One patient explained that-

“I did eat quite a lot fatty food and I didn’t really care too much but when I found out that I had gestational diabetes, I tried to make a stop to that. I focused on having a balanced diet; I exercise regularly.” (Patient 6)

When this patient was asked about the reason for this change, she responded-

“Because I did know that I had gestational diabetes which is a very big disease and I wouldn’t really want to get type 2 diabetes because eating very fatty food and sugars is a very big risk once you have gestational diabetes.” (Patient 6)

"Always had a weight problem"

Although, the reason for health changes was not always high-risk perception. Some participants were trying to lose weight or were following the general positive, healthy style to stay healthy.

> "I've always dieted, I've always been a yo-yo dieter and I have always stuck to Slimming World and I'm on Slimming World now." (Patient 7)

This participant was then asked if it had anything to do with her diagnosis of gestational diabetes or of any health advice she was given. Her reply was –

> "I go on my own as I have always been overweight. I have always had a weight problem. I'd like my children to do the same because my daughter has got a weight problem. That was my own decision to go to Slimming World. I was worried about my weight." (Patient 7)

4.7: Barriers to adopting a healthy lifestyle

Similar to feelings associated with diagnosis, barriers or motivation to adopt healthy lifestyle was not a research question but these themes emerged during the interview and added to patients' experience. Some patients accepted that they hadn't changed their lifestyle after a diagnosis of gestational diabetes in their pregnancy. The three major barriers to change were reported as time constraints, child care and lack of information.

“I never had time”

“When children were much younger it was much harder to maintain what I would see as a healthier lifestyle. When I am trying to look after them, it is easier to eat quickly and I never had time to go to the gym. I was at home with the children until both of them were three.” .....“I think when you have very young children it’s very hard to look after yourself as you are so busy looking after the children. With the children around and having had both of my pregnancies as I said I was very unwell and my diet was terrible and I was exhausted so I didn’t do exercise”.

She also added that-

“I haven’t made any changes as a result of having it. The changes have come because my children have got older and it is easier for me to go out and exercise; it is easier to cook a meal for everybody, one meal that everybody can eat that is reasonably healthy without having to think one thing for them and one thing for another. I’ve not changed anything at all as a result of diabetes but definitely if there had been other factors I would. If somebody had given me more information and I was more aware, possibly I would make other changes but I have not had that information so I am just carrying on as normal”. (Patient 2)

"I had a healthy lifestyle before"

“This is what I’m not sure about because I had a healthy lifestyle before and still got it so I’m thinking does that mean now that I am still going to be

at risk in the future because obviously it's happened once and so I don't really know and because the GP's don't seem to be concerned about it when I have mentioned it at check-ups. When I say I had gestational diabetes they've said I'm fine and have been given the clear so I just think well that's it, does that mean there is no future risk. I don't know (pause) yeah, I would be interested to find out." (Patient 5)

"Don't think I had it"

Another participant had borderline GD and she believed her diagnosis was a misjudgement by health carers. As a result, she didn't think that she had a high risk or need to make any changes.

She reported -

"I feel a bit cheated because I actually don't think I had it. (pause) I felt like I was misdiagnosed and it was overzealous nurses that gave me the diagnosis when I should not have been."

"I was told that there was a risk because my mum had Type II diabetes and I was overweight (erm... pause) and so it does fit but whether I actually have it I probably would say that I didn't because I never had any treatments apart from when I was put on treatment by an overzealous nurse."

When this participant was asked if she has made any lifestyle changes after her pregnancy, her response was-

"No, I think that my problems were result of my thyroid, the weight gain that I had and being overweight when I got pregnant.." (Patient 3)

4.8: Motivation to adopt a healthy lifestyle

Some participants, on the other hand, were very concerned about their health and wanted to live a long and healthy life with their children. The participants who were motivated to adopt a healthy lifestyle mentioned few reasons such as

“I’m interested in being healthy”

> “I am obviously very concerned, I am over forty and I have a three-year-old son you know, I want to be around for as long as possible with him. I wanna' be back to healthy much for him. It's very important to me so I try to be a lot healthier.” (Patient 1)

> “I guess I’m interested in being healthy and I think it is an individual’s responsibility to keep themselves healthy and I want my children to be healthy.” “I think educated people do have a good understanding of a healthy lifestyle. I also work in media so I am absorbing those messages, I’m aware of health issues especially in this city that there are huge incidences of heart disease, diabetes and cancer and I guess once you are reading about those you are aware of what can cause them.” (Patient 4)

It was evident from the interviews that participants had different reasons for their interest in adopting healthy lifestyles. It was not always the high-risk perception which was motivating them.

"Wouldn’t really want to get Type 2 diabetes"

Some participants showed motivation to avoid the risk of developing diabetes in the future but it was noticed that the participants who were motivated were either informed by health professionals or self-efficient participants managed to acquire information from other resources.

> “Because I did know that I had gestational diabetes which is a very big disease and I wouldn’t really want to get Type 2 diabetes because eating very fatty food and sugars is a very big risk once you have had gestational diabetes. Yes, I do maintain those changes. I do try to remember. Every now and then if I forget to do my work-out, then I would try and fit it in later on in the day so I do still try to maintain those changes. Mainly because I don’t want to get Type 2 diabetes and I want to stay healthy.” (Patient 6)

> “I am overweight anyway and I am going blind as well and you can go blind with diabetes as well so I don’t want to make anything worse. That is through an accident I had.” (Patient 7)

One of the above patients reported getting a risk warning and health advice from her doctor during her pregnancy (patient 6) and another one (patient 7) reported looking for information on the internet.

Chapter 5: Discussion

The primary aim of this research was to explore the risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes. Therefore, participants' understanding towards the risk of developing diabetes after GD and their involvement in the postnatal screening and prevention programmes was explored.

This study noticed a contrast between the responses related to immediate risks of complications during the pregnancy and long-term risk of developing diabetes after pregnancy. Most Participants reported receiving information, clinical care and risk warnings concerning the immediate risks of gestational diabetes during their pregnancy. The given instructions were followed because participants were made aware of the serious consequences of uncontrolled diabetes during pregnancy and they did not want to compromise the health of their baby. However, their risk of developing diabetes in the future was not an immediate concern. The message of GD as a risk factor for developing diabetes in the future got diluted following the childbirth, and there was not enough reinforcement of the message, post delivery. Once patients had a post delivery screening and were declared 'clear' it was assumed that the 'problem' was resolved.

HBM explains that health behaviour depends on the value placed on the goal and the estimate of achievability of that goal by adopting suggested action (Janz & Becker, 1984). Like other previous studies by Kim et al. (2007) Malcolm

et al. (2009), and Gordon, Walker and Carrick (2013) the interviews showed that most of the participants had a low-risk perception of the future risk of developing diabetes, and they were uncertain about the required actions. Therefore, lifestyle modification was not seen as an achievable goal. Similar to the findings by Malcolm et al. (2009) a few patients in our study knew about the risk but believed that their risk of developing type 2 diabetes was no different from women with no history of GD.

In contrast, a recent qualitative research by Lie et al. (2013) has shown a high-risk perception of increased risk of developing type 2 diabetes in the women with previous history of diabetes. Authors have however acknowledged that the understanding of the increased risk varied in the patients. The possibility of social desirability bias due to reliance on self-reported data was also mentioned. Similar to our study this research has also identified a significant contrast in antenatal and postnatal health behaviour due to major differences in provided health care during and after pregnancy.

Our study found that during the pregnancy, women were consulted regarding the immediate effects of gestational diabetes on pregnancy, delivery and foetal health. In most cases risk information brought patients worries, concerns and anxiety but also helped in achieving favourable pregnancy outcomes by following the suggested health behaviour. Ju, Rumbold, Wilson and Crowther (2008, 2010) also suggest that effective preventative strategies help in reducing the risk of adverse pregnancy outcomes. Our findings also comply with the Health Belief Model that participants adopt positive health behaviour if they

believe that they have serious but avoidable health risks. (Janz & Becker, 1984).

The findings also suggested that the inconsistency of serious immediate risk warnings with the positive pregnancy outcomes caused a sense of relief and the concerns about future health risks were diluted. It seemed that patients did not take the one off future health warning seriously and reported an absence of reinforcement. In addition, it appeared that probably the reassurance from health professionals further lowered the risk perception for developing diabetes in the future. As a consequence, GD was perceived as a temporary condition, and many participants believed that their condition had resolved following childbirth.

Hjelm, Berntrop, Frid, Aberg & Apelqvist (2008) and Torloni et al. (2009) have previously emphasised the importance of the context of information for influencing the beliefs and attitudes towards GD either as a transient condition during pregnancy or as a potential risk factor for developing diabetes in the future.

During the interview, some self-reliant participants reported looking for information through internet research, but this information was described as overwhelming, confusing and misleading by many women. Some participants acquired information from family members with diabetes. Women who tried to look for information seemed to be the ones who also attempted to adopt a healthy lifestyle. Similar to a previous finding by Kim et al. (2008) this study also

suggests that women with higher self-efficacy are more likely to change their lifestyle. Nonetheless, the reliability of self-acquired health information is arguable because unreliable health information can cause more harm than benefit.

Similar to risk perceptions, this study also identified a wide variation in GD women's participation in postnatal screening, follow-up screening and health intervention programmes. NICE guidelines (2008) recommend a fasting plasma glucose screening at six weeks postnatal check and annually screening after that. The reported postpartum screening rate in the current study was high as shown in three previous surveys conducted in the UK (Hanna, Peters, Harlow & Jones, 2007; Pierce et al., 2011; National Diabetes in Pregnancy Network, 2013). Most participants in the current study remembered having a postnatal screening after a few weeks of delivery.

There is limited published data on the long-term follow-up of gestational diabetes in the UK. NICE (2008) recommends a postnatal lifestyle advice and annual screening for GD patients. The results of two national surveys in the UK showed that around 90% health professionals reported providing risk counselling and 90% recommended annual screening for all GD patients (Hanna, Peters, Harlow & Jones, 2007; National Diabetes in Pregnancy Network, 2013). Pierce et al. (2011) reported 39% long-term follow-up of gestational diabetic patients. Participants of this current study did not report receiving any health counselling or reminders about annual follow-up screening after their delivery. These results are consistent with another retrospective patient data survey, that was conducted in the UK and reveal a low (20%)

annual long-term screening rates (McGovern et al., 2013). The previous national surveys were based on health professionals' reports, and self-reported studies are often criticised for overestimated reported rates (McGovern et al., 2013). Similar to a previous study by Pierce et al. (2013) this research also suggests that the responsibility to ensure the annual screenings lies with the health providers as publishing guidelines does not necessarily change practice. Besides, it is worth arguing that patients usually do not have easy access to health guidelines or other research information, and they rely on health providers for receiving appropriate health information.

Barriers or motivation for compliance with positive health behaviour were not direct research questions, but a few participants mentioned them as a justification for their health behaviour. Consistent with previous studies (Ratnakaran, 2009; Dasgupta et al., 2013; Lie et al. 2013) this study also found that time constraints, lack of energy, and family responsibilities were a few barriers which influenced lifestyle changes. Moreover, it was found that physical activity was mostly affected by increased demands of child care. Healthy eating, on the other hand, was difficult because most of the participants reported that newborn child became a priority, and they didn't have enough time to cook healthy meals for themselves. Whereas, health concerns, desire to live longer, being a good role model for their children and weight loss were reported as a few motivational factors for positive health changes. The HBM describes an inverse relationship between perceived benefits and barriers as a person is more likely to opt for positive health change if they believe that the benefits of taking action exceed associated barriers (Janz & Becker,1984). This inverse

relationship could be used to overcome barriers by promoting the health benefits. The study suggests that these findings can be used for developing new effective intervention programmes for GDM patients.

5.1: Implications

This study recommends for a long term, a well-structured comprehensive intervention programme for GD patients. Early intervention, starting straight away with the diagnosis is suggested to minimise initial shock and anxiety in GD patients. This could also prepare and enable patients to face the news confidently empowered by information and support rather than fear and anxiety.

Need for recognising the importance of the context of information was also realised. It appeared that the context of given information in some cases influenced patients perception of GD as a transient condition rather than a possible risk of developing diabetes in the future.

Despite the introduction of national recommendation guideline (NICE 2008) the present study has shown a scope for developing long-term follow-up health intervention programme incorporating a reminder system for annual screening. Considering that patients do not have access to health guidelines and early symptoms of the development of the diabetes are not visible the responsibility of raising awareness towards the risk lies with the healthcare system. It was evident that providing a one off postnatal screening with a brief risk warning was not adequate for promoting risk perception or positive health changes.

Therefore, a need for reinforcement of risk warning with an assurance of proven strategies to help reduce this risk was experienced.

Furthermore, the need for developing effective but economically viable strategies to improve follow-up health behaviours (as mentioned before) was recognised. Many previous studies have recommended the use of the internet, telephone messages or texting as a cost effective method for follow-up intervention. Most of all, this study identifies a scope for improving co-ordination between primary and secondary health care to ensure systematic, consistent and uniform postnatal follow-up care.

5.2: Strengths and weakness

The main strength of this study is that it is a patient-oriented research, designed to explore patients' perspectives through their experiences. Morse (2015) suggests an inverse relationship between number of participants and amount of data collected from each participant. Following the suggestion, small numbers of participants were recruited to collect rich data through open-ended questions. A very limited qualitative research is done in this field. Therefore, the results of this research will add on to a detailed account of patients' perceptions and experiences through providing rich qualitative data.

However, small sample size had its limitations. The limited numbers of patients were recruited from a single centre and the data collected was a retrospective account of the patient experience. Therefore, this research only presents a

glimpse of risk perception, health behaviour in a local area and does not provide a full picture of practice in the UK. Besides, qualitative research is sometimes criticised for the self-reported data and social desirability bias. A wider literature search was conducted before starting the analysis, and the collected data was compared with the previous research findings to minimise the bias. However, this was done very carefully because the purpose of qualitative study design is not to generalise the results with the previous results.

5.3: Future research recommendation

This study only included participants who attended an antenatal clinic between the years 2008 and 2012. The recent publication of NICE guidelines (2014) could have brought new advances in the care of GDM patients in the subsequent years. Therefore further research to explore the new advances in the health care for GDM patients would provide more insight on the issue.

During the interview, some patients showed awareness of a healthy lifestyle to some extent, but this research could not explore participants' health awareness in depth. The shown health awareness could be a result of social desirability bias. Therefore, in-depth exploration of GD patients' understandings of a healthy lifestyle is also advisable because a flawed understanding can cause some serious irreversible damage to the health of GD patients. Finally, a comparative longitudinal randomised trial to compare the lifestyles of patients who developed diabetes within few years of GD with the ones who had no occurrence after more than ten years of having GD could also be insightful.

Chapter 6: Conclusion

Findings from this qualitative research suggest an inconsistency of risk perceptions, health beliefs and behaviour in women with previous history of gestational diabetes. The study found that women with previous history of gestational diabetes have a low-risk perception of developing diabetes in the future. A few participants showed awareness of risks, but they did not see any association between gestational diabetes and an increased risk of developing type 2 diabetes and assumed that their risk was the same as anyone including those without a history of gestational diabetes. The contrast between adopted health actions during pregnancy and after delivery suggests that there are fewer concerns about the future risk, and GD is often mistaken as a transient condition of pregnancy.

The interview data also indicated that postpartum follow-up screening rates were high, and they were performed within few weeks of delivery, but a lack of awareness for annual follow-up screening was evident. Participants did not report any involvement in follow-up diabetes intervention programme. A few patients were trying to follow a healthy lifestyle but their account of required health actions was suggesting limited awareness.

The context of the delivered health message, reassurance about future risk and lack of structured information were a few identified factors influencing the level of risk perception and health behaviour of participants. In addition, time constraints and increased demands of childcare responsibilities also partially

contributed towards the low compliance of the required health actions. This research proposes that GD patients should be timely involved in an early education programme to be enabled to face the diagnosis of GD confidently, empowered by information and support. The study also recommends for a long-term, comprehensive intervention programme with an incorporated safety net (reminder) system for annual screenings to reinforce the risk warning and inform about required health actions to address the future risk of developing type 2 diabetes.

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Appendix - A

Research proposal

Title - A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes

Aims and objectives

The aim of this project is to explore the risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes living in Merseyside, UK. Qualitative data will be collected by using semi-structured, face-to-face interviews to explore women's understanding around

- the increased risk of developing diabetes in women with previous history of gestational diabetes;
- diabetes screening programmes;
- diabetes prevention measures.

Introduction and background

Gestational diabetes is glucose intolerance first defined at pregnancy. While glucose intolerance resolves with delivery most of the time it increases the risks for developing type 2 diabetes in the future (Hunt, Logan, Conway & Korte, 2010; Savill, 2012). Evidence shows that without health interventions, about 60 percent of women with a history of gestational diabetes develop type 2 diabetes within 10 years of delivery (GDM Guide, 2009). It is also found that life style interventions can significantly delay or prevent the appearance of type 2 diabetes in this population (Billamy, Casas, Hingroni & Williams, 2009). NICE guidelines for diabetes in pregnancy (2008) in the UK recommend that women who were diagnosed with gestational diabetes should be offered lifestyle advice (including weight control, diet and exercise) at the diagnosis and a fasting plasma glucose measurement at the 6-week postnatal check and annually thereafter. However, it is also evident from research that most women

consider gestational diabetes as a temporary condition (Swan, Liaw, Dunning, Pallat & Kilmartin, 2010) and do not perceive themselves to be at elevated risk of developing type 2 diabetes (Kim, et al. 2007). This lack of knowledge and low risk perceptions may become a hindrance to promote self- efficacy (Bellamy, Casas, Hingorani & Williams, 2009).

An American critical review (Jones, Roche & Appel, 2009) suggests that research is necessary to identify factors that influence the health beliefs and behaviours of women with previous gestational diabetes and to develop appropriate interventions to address gaps in risk awareness. Heatley, Middlleton, Hague & Crowther (2013), advocate using a text message reminder system in Australia to promote postpartum glucose tolerance testing and health interventions. A Canadian study by Keely (2012), also supports the need for improvement in postpartum screening rates and risk awareness in women with history of gestational diabetes. The area of risk perceptions, health beliefs and barriers to healthy lifestyle changes amongst women with history of gestational diabetes has attracted several research initiatives. However, in the United Kingdom there has been very limited work done in this field. Therefore the purpose of this qualitative exploration is to explore the risk perception, health awareness, and awareness around screening and life style intervention programme amongst the women with previous history of gestational diabetes living in the North West, England.

Background work

An initial literature search was conducted between November 2013 and April 2014. A research proposal poster was presented to an academic panel at the University of Chester and an expert consultation was conducted with the academic supervisors and professional experts both at University of Chester and Royal Liverpool University Hospital.

Resources and timeline

This is a Public Health MSc dissertation project. Dr Stephen Fallows and Professor Lynne Kennedy are the academic supervisors at University of Chester and Dr Tejpal Singh Purewal (Consultant in Diabetes and Endocrinology) will supervise this project at the Royal Liverpool University Hospital, Liverpool, UK

Nov/Dec 2013	Literature search and poster presentation
March & April 2014	Writing a research proposal
May, June & July 2014	Development of research protocols, sampling and recruitment framework, data collection and analysis methods/tools Logging on to IRAS for filling in online NHS ethical approval form
September 2014	Ethical approval from NHS
October 2014	Invitation letters sent
October 2014	Recruitment and interviews
November 2014	Data transcription, analysis, writing and submission

A budget of around £100 may be required for recording equipment, paper and postage. This will be self funded.

Method

Recruitment strategy

Twenty women with previous history of gestational diabetes mellitus who have attended antenatal diabetes clinic at Liverpool Women's Hospital run by the diabetes team from Royal Liverpool University Hospital between 1st April 2008 to 31st March 2012 will be invited to participate in this survey following acquiring a valid consent.

A member of the patient's clinical care team (antenatal diabetes care team at Royal Liverpool University Hospital) will identify potential participants from the database and check whether they meet inclusion criteria. They will make the initial approach to patients by sending invitation letters along with consent forms and study information sheets with a pre-stamped envelope for a return consent. Once enough responses (minimum 10) have been received, interviews will start. Otherwise more patients will be identified and approached. It is hoped that participants will be recruited by the first week of October and interviews will take place during October.

Inclusion criteria

- English speaking women, aged between 18 to 40 years (at the time of pregnancy) who had previous history of gestational diabetes mellitus
  and
- have attended antenatal diabetes clinic at Liverpool Women's Hospital after 1st April 2008 and before 31st March 2012
  and
- are currently living in Merseyside.

Exclusion criteria

- Women who were under the age of 18 or over 40 years (at the time of pregnancy);
- Women who had gestational diabetes before 1st April 2008 or after 31st March 2012;
- Women who have developed Type 2 diabetes mellitus;
- Women who are pregnant;
- Women who cannot communicate in English;
- Women who have moved out of Merseyside area.

Data collection

Qualitative data will be collected by face-to-face interviews with the help of semi-structured interview schedule which will be voice-recorded and transcribed. Interviews will be stopped once new themes will stopped emerging and an acceptable interpretative framework is constructed after the stage of thematic saturation (Marshall, 1996).

Data Analysis

A thematic analysis of the qualitative data will be undertaken to identify, analyse and report the patterns and themes within the data. This will be in six phases (Braun & Clarke, 2006).

1) Familiarizing with the data by repeated reading and transcribing the data;

2) Generating initial codes and collating data relevant to each code;

3) Searching for themes and collating codes into potential themes;

4) Reviewing themes and generating a thematic map of the analysis;

5) Defining and naming the themes;

6) Producing a scholarly report of the analysis.

Expected outcome

MSc Public Health Nutrition dissertation, internal NSS report and publication in peer reviewed journal.

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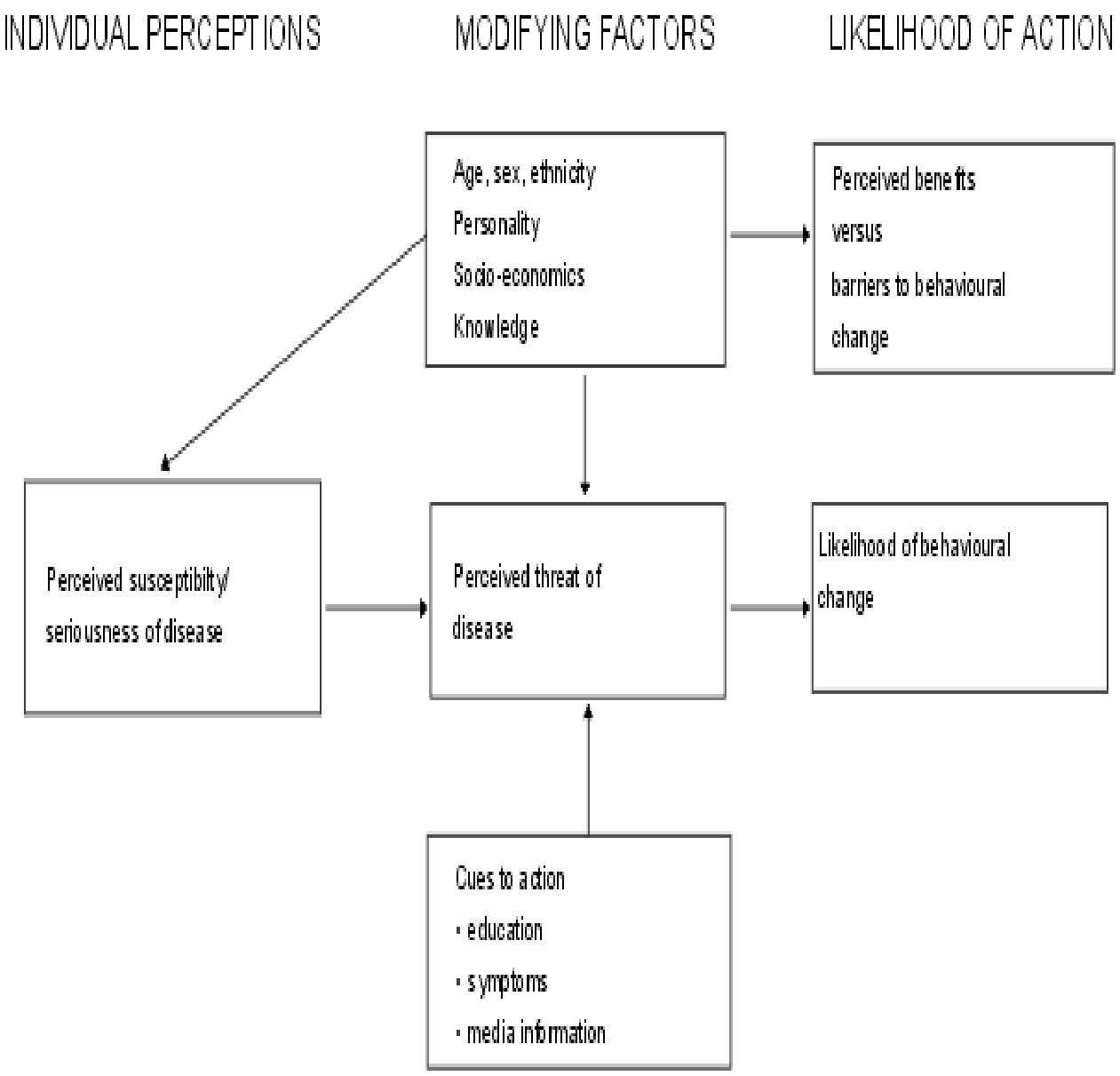


Source: Glanz et al, 2002, p. 52

Health Belief Model

Appendix -B

NHS
Health Research Authority
NRES Committee South Central - Hampshire B
Level 3 Block B
Whitefriars
Lewins Mead
Bristol
BS1 2NT
Telephone: 0117 342 1384

07 November 2014

Dr Stephen Fallows
University of Chester
Park Gate
Chester
CH1 4BJ

Dear Dr Fallows

Study title: **A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes**
REC reference: **14/SC/1322**
IRAS project ID: **156978**

Thank you for your letter of 05 November 2014, responding to the Proportionate Review Sub-Committee's request for changes to the documentation for the above study.

The revised documentation has been reviewed and approved by the Sub-Committee.

We plan to publish your research summary wording for the above study on the NRES website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to withhold permission to publish, please contact the REC Manager, Libby Watson, at: nrescommittee.southcentral-hampshireb@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

1) The invitation letter v2 has an added paragraph about the reply slip. The words 'as soon as possible' should be removed from this paragraph, as this could be unduly persuasive.

2) In the PIS, under 'Will my taking part in the study be kept confidential?' please add a statement regarding what happens if evidence of poor clinical care or significant risk issues are

revealed. As you will inform the primary care and clinical care team, the confidentiality is therefore not as absolute as currently stated in this version of the PIS and this needs to be clarified, for example, with a statement such as "In the unlikely event that evidence of poor clinical care, or significant risks to yourself or others, emerges during the interview, we will inform the primary care and clinical care team."

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which can be made available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

NHS
Health Research Authority

REC Application Form [REC_Form_01102014]		01 October 2014
Research protocol or project proposal [Research Proposal]	1.0	24 September 2014
Summary CV for Chief Investigator (CI) [CV chief investigator]	1.0	16 July 2014
Summary CV for student [Student CV]		24 September 2014
Summary CV for supervisor (student research) [CV Supervisor]		24 September 2014

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

14/SC/1322 **Please quote this number on all correspondence**

Yours sincerely

Miss Natasha Bridgeman
REC Assistant

E-mail: nrescommittee.southcentral-hampshireb@nhs.net

Copy to: *Professor Sarah Andrew*
Ms Heather Rogers, NHS

The Royal Liverpool and Broadgreen University Hospitals
NHS Trust

Royal Liverpool University Hospital
Prescot Street
Liverpool
L7 8XP
Tel: 0151 706 2000
Fax: 0151 706 5806

TRUST APPROVAL LETTER FOR NON-CTIMP STUDIES

Dr Tejpal Purewal
Royal Liverpool & Broadgreen University Hospitals NHS Trust
Department of General Medicine
Prescot Street
Liverpool
L7 8XP

REC: **14/SC/1322**
Date: **10/12/2014**

Dear Dr Purewal

RD&I No: 4838
A qualitative exploration of risk perception, health beliefs and health behaviours in women with previous history of gestational diabetes

The above study is a Non-Commercial, Qualitative Only study, sponsored by the University of Chester and with no costs. The Trust is now happy for you to commence work on this study, using the following ethically approved documents.

Document	Version	Dated
Interview schedules or topic guides for participants [Interview Guide]	1.0	24 September 2014
Letter of invitation to participant [invitation letter]	3.0	10 November 2014
Other [Reminder Slip]	1.0	28 October 2014
Other [Reply Slip]	1.0	28 October 2014
Participant consent form [Participation Consent form]	2.0	28 October 2014
Participant information sheet (PIS) [Participant information sheet]	3.0	10 November2014
Research protocol or project proposal [Research Proposal]	1.0	24 September 2014

May I to take this opportunity to remind you of your responsibilities as PI for this study to:-

- Report SAE's as per protocol and Trust policy and record total number on OSIRIS
- Ensure that all screening and recruitment activity is updated on OSIRIS every Friday (training can be obtained if required by phoning Ext. 3320)
    - Department of Health target for this study is first patient recruited by **16 December 2014**
    - Please provide a timely response to requests for information regarding achievement of this target

- For Trust sponsored studies, provide RD&I with copies of regulatory annual progress and safety reports to Ethics
- Complete and return the RD&I annual report form in a timely manner
- Comply with the Research Governance Framework 2nd Ed 2005 including but not limited to the Medicines for Human use (Clinical Trials) 2004 act plus it's appendices and the Data Protection Act 1998
- Read, disseminate to research team and acknowledge to RD&I, Trust research SOP announcements (details of relevant SOP's can be found at http://staffintranet/departments_and_services/corporate_services/research_and_development/documents/documents.aspx)
- Inform RD&I of any amendments to, or changes of status in, the study.
- Ensure any conditions to approval stipulated by the MHRA/ REC have been addressed prior to implementation of approved changes
- Maintain the study site file (if not provided by the sponsor a template is available on the Trust intranet)
- Provide copies of publications

Investigators who do not comply with the above will be dealt with in accordance with the Trust Disciplinary policy and/or will have their research stopped.

I wish you every success with your research. Please contact the RD&I Department if you require any advice on the above points.

Yours sincerely

Julia West
Operational Director RD&I

cc Head of Directorate
University of Chester

.....

I agree to the terms and conditions of the Trust research approval for RD&I **4838, A qualitative exploration of risk perception, health beliefs and health behaviours in women with previous history of gestational diabetes** and am aware of my responsibilities under the Research Governance framework and Trust Research SOP's.

Signed: ..... Dated: .....

Please return a copy of this letter to the RD&I Department, 4th Floor Linda McCartney Centre, Royal Liverpool Hospital, Prescot Street, Liverpool, L7 8XP

Thank you

Appendix - C

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Date

Dear (patient's name)

This is a letter of invitation to enquire if you would like to take part in a research project "A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes" at Royal Liverpool University Hospital.

Before you decide if you would like to take part, it is important for you to understand why the project is being done and what it will involve. Please take time to carefully read the Participant Information Sheet on the following pages and discuss it with others if you wish or ask me if there is anything that is not clear, or if you would like more information.

Your participation in the study would be appreciated. If you decide to take part could you please complete and return the reply slip.

Please do not hesitate to contact me if you have any questions.

Yours faithfully,

Dr Tejpal Singh Purewal

Consultant Diabetologist

Royal Liverpool University Hospital

Prescot Street

Liverpool

L7 8XP

Phone:01517063091

e mail: tejpal.purewal@rlbuht.nhs.uk

University of Chester

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Participant information sheet (Version 3.0)

A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of the study?

This research will be undertaken on healthy female adults with a previous history of gestational diabetes. The aim of this project is to find out the health related experiences amongst the women with previous history of gestational diabetes.

Why have I been chosen?

You have been chosen because you are an adult (age 18 to 50 at the time of your pregnancy) female with previous history of gestational diabetes.

What is gestational diabetes?

Gestational diabetes is a condition when glucose intolerance is first defined during pregnancy.

Do I have to take part?

It is up to you to decide whether or not to take part. You would be provided plenty of time to think and decide about willingness to participate in the study.

If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. You are provided a self addressed prepaid envelope to send your reply. A reminder will be send if any response is not received in two weeks time.

If you decide to take part you are still free to withdraw at any time without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect you in any way. If you decide to attend the interview travel cost of £10 will be reimbursed.

What will happen to me if I take part?

You will come to one interview session and answer few research associated health questions. The interview will take 30-60 minutes and will be recorded and used only for this research purpose. All the recording and notes will be coded anonymously. No-one will be identifiable in the final report.

What are the possible disadvantages and risks of taking part?

There are no disadvantages or risks foreseen in taking part in the study. The interview guide sample has been tried and tested in a few gestational diabetes patients in advance to check that this is not causing any worries or stress in patients. However, in the unlikely event of risk issues causing distress, during the interview, the interview will be ended and you will be offered a discussion with a member of the diabetes team at Royal Liverpool University Hospital.

What are the possible benefits of taking part?

By taking part, you will be contributing to the knowledge of risk perception and health behaviours in women with the previous history of gestational diabetes.

This also might have a potential benefit for the development of appropriate care models.

What if something goes wrong?

If you wish to complain or have any concerns about any aspect of the way you have been approached or treated during the course of this study, please contact Professor Sarah Andrew, Dean of the Faculty of Life Sciences, University of Chester, Parkgate Road, Chester, CH1 4BJ, 01244 513055.

Will my taking part in the study be kept confidential?

All the collected information about you during the course of the research will be kept strictly confidential. Only the researcher carrying out the research and her supervisors at University of Chester, regulatory authorities and relevant individuals from NHS trust will have access to such information. “In the unlikely event that evidence of poor clinical care, or significant risks to yourself or others, emerges during the interview, we will inform the primary care and clinical care team.”

What will happen to the results of the research study?

The results will be written up into a report for the final project of researcher's MSc and possible publication in peer reviewed journal. Individuals who participate will not be identified in any subsequent report or publication.

Who is organising the research?

The research is conducted as part of a MSc in Public Health and Nutrition within the Department of Clinical Sciences and Nutrition at the University of Chester. The study is organised with supervision from the department, by Manisha Sharma, an MSc student.

Who has reviewed the study?

The study has been reviewed by the Hampshire B Research Ethics Committee who decides whether or not the study can be conducted in the UK. It has also been reviewed at the University of Chester.

Who may I contact for further information?

If you would like more information about the research before you decide whether or not you would be willing to take part, please contact:

Manisha Sharma Email: 0818214@chester.ac.uk

Thank you for your interest in this research.

University of Chester

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

CONSENT FORM (Version 2.0)

Title of Project: A survey of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes

Name of Researcher: Manisha Sharma Please initial box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐
2. I understand that I will receive a copy of this signed informed consent form and the subject information leaflet. ☐
3. I understand that relevant sections of my medical notes and data collected during the study, maybe looked at by individuals from University of Chester, regulatory authorities and NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. ☐
4. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected. ☐
5. I agree for my interview to be audio recorded ☐
6. I had sufficient time to come to my decision and agree to take part in this study. ☐

Name of Participant	Date	Signature
Researcher	Date	Signature

University of Chester

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Reply Slip

Study: A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes

Please tick mark (✔) the appropriate choice.

I am interested ☐

not interested ☐

in taking part in the above research and would like to find out more about the opportunity to get involved in this research at Royal Liverpool University Hospital.

Please arrange for the researcher to contact me.

Signature..... Date.....

Name: .....

Address: .....

.....

Telephone: .....

Please return your reply slip in the enclosed self addressed stamped envelope.

University of Chester

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Reminder Slip

Date.....

Dear .....

We recently sent you a request to participate in a research on the topic of "A qualitative exploration of risk perceptions, health beliefs and health behaviours in women with previous history of gestational diabetes".

This is just a short reminder following the previous participation request. We hope you consider participating in this research. A copy of Participant information sheet is enclosed. Please take time to carefully read this information Sheet. Your participation in this study is entirely voluntary and all of your responses will be kept confidential. Please do not hesitate to contact me if you have any questions.

Yours faithfully,

Dr Tejpal Singh Purewal
Consultant Diabetologist
Royal Liverpool University Hospital
Prescot Street Liverpool
L7 8XP
Phone:01517063091
e mail: tejpal.purewal@rlbuht.nhs.uk

Appendix - D

University of Chester

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Interview Guide

(Around 30 minutes)

Introduction:

A) Hello, my name is Manisha Sharma and as part of my MSc research at University of Chester I would like to ask you few questions about your experience and health issues from developing gestational diabetes. There are no right or wrong answers to my questions so please feel free to answer the questions as you wish.

B) With your permission I would like to record this conversation on a Dictaphone . As I have explained in the information sheet, all the data will be kept anonymous and confidential. Your name will not appear in any report. Our conversation will be coded and will be only refer to it by that code. They can be accessed only by me and my supervisors for this research purpose. The results from this interview will be written up to be presented as a dissertation report.

C) Are you still happy to take part in the study and are you happy for me to record the conversation? Is it alright with you and shall we proceed? If at any point during the interview you would like to stop, you are free to do so. Please let me know straight away and we will stop without any problem. OK thanks, we will begin now -

The interview topics / prompts - The questions below form an Interview guide and they will be used to initiate and stimulate the conversation.

Primary topics	**Interview guide**	**Clarifying questions**
Risk perception of developing diabetes over the future.	**a)** How did you feel when you were diagnosed with gestational diabetes? **b)** What do you know about gestational diabetes and associated risks ?	**b)** If you think there is a risk**, w**hy do you think so?

Blood glucose screening	**a)** What tests were you offered to find out the presence or absence of diabetes after the delivery? **b)** What kind of follow up glucose test arrangements do you have at your surgery?	**a)** If yes, when? **b)** If yes, how often? and do you get it regularly? What is the motivation to get it done or barrier if not getting any?
Health belief and behaviour (Prevention measures)	**a)**What do you understand by a healthy life style? **b)** What was your life style like before your pregnancy? **c)** Have you made any changes after being diagnosed with gestational diabetes? **d)** If you have made any life style changes then, do you still maintain those changes? **e)** What health advice would you give to a friend who is being diagnosed by having gestational diabetes? f) What do you know about how to avoid type 2 diabetes in the future?	**a)** Diet and physical activity levels **b)** Diet and physical activity **c)** Reasons for changes if any made and if the patient is aware of life style's association with risk factors. What is your life style now? **d)** Why or why not? e) Why, could you please elaborate?

Patient 2

1. **How did you feel when you were diagnosed with gestational diabetes?**

   I was shocked I hadn't expected to find that I would be diagnosed and I was also quite sad because my pregnancy had been quite difficult and it was just another thing to add to some of the other problems so it was not a good day and it was not good news(with a big sigh). On the same day one of my friends had also gone for the same test because she'd had gestational diabetes in her first pregnancy so they were testing her just as a matter of routine and she was fine and I was not. I was really upset (Evident dissatisfaction in her tone).

2. **What do you know about gestational diabetes and the associated risks?**

   At the time I didn't know anything I had no understanding though I knew it existed but I didn't know that what the risks were but obviously having been diagnosed they then looked after me at The Liverpool Women's Hospital very well I had an appointment every week. I had to change my diet, I had to prick my finger before every meal to test the blood and my understanding became that really it was just very similar to normal diabetes the same things that people who have diabetes have to do I had to do except for there were higher risks of complications at the end of my pregnancy. For me it was a little bit confusing because the things they told me were 'your baby could be very large' and 'we would like to induce you two weeks early because your baby could be very large'. (Short pause) I'm not a large person and my bump was not large so I trusted what they told me but I didn't feel that it applied to me because I was not showing a particularly large size for the term that I was up to. Each week I would go and they would check and everything was fine and so I guess in some ways it had an effect on me but probably I didn't feel too concerned because what they were telling me didn't seem to resonate with my experience.

3. **What other information did you get?**

   I don't actually remember that they told me any of the complications, probably they did but I don't remember. They said there could be more complications for your child and particularly you must watch your diet etc because that could affect the baby which I did so I was careful with my diet. I changed my diet I was given lots of information about what is good to eat what is not good to eat and obviously when you're checking your blood every three to four times per day it is easy to tell if you are eating too much of the wrong things or if you are eating well. Other than that I don't remember many other complications. If there were more serious ones I don't remember them and they maybe didn't talk with me about them in much detail. I had a scan at 37 weeks and they told me that the baby was fine and that the baby was probably going to be quite tall and big but it was wrong. When the baby was born at 38 weeks via induction she was 6lb 2oz. She was very little and she was born with a natural birth and everything was fine. It was all very normal and very easy.

My only worry was that after the birth that my diabetes would stay with me but really all the way through from finding out I had the gestational diabetes until she was born it was a pain to have to prick my finger every day and to watch my diet but actually it was good for me and there were no major problems. I didn't worry so much because they didn't tell me anything that made me feel very concerned.

4. **After your delivery were you offered any tests to check your diabetes and if yes, what tests were you offered?**

   I think because of my diabetes the day after birth I think they did something as a result of me having gestational diabetes that I didn't have when my son was born. There were a number of things that they had to do. I also have a blood clotting disorder and so I also had to have injections for six weeks afterwards so that probably is more in my mind than the gestational diabetes but I think possibly six weeks after she was born they took me back in and they gave me another diabetes test where you have to fast, drink the sugar and then come back in two hours and take some more blood and I was so convinced that I had diabetes. I did the test and it was negative and I was fine. Clearly my body had gone back to its normal self. After that they signed me off.

5. **After your diagnostic test for diabetes were you given any advice for follow up glucose tests or did they arrange any follow up glucose tests after that?**

   Nothing was advised. The test had come back negative. I was signed off. I am sure they informed my GP. They did say if you have had gestational diabetes you are at higher risk of developing diabetes in later life. They told me that but I'm sure with anybody if their diet is unhealthy then anyone is at risk of developing diabetes so it didn't necessarily mean so much. I was just relieved that I didn't have it anymore.

6. **Did you have any further glucose test arrangements?**

   I think I just went one time six weeks after but never had to go back again. I guess if I was to fall pregnant again then they would test me quite early but I am not planning on having any more children so they have never asked me to come back.

7. **Have you made any changes after your delivery in your lifestyle?**

   Probably not. I think when you have very young children it's very hard to look after yourself as you are so busy looking after the children etc. One thing that was very interesting for me is both of my pregnancies I was very sick and very tired and with my pregnancy, with my daughter I was unable to eat very well, I didn't want to eat much food because I was feeling very sick but I ate quite a lot of sugar with her an then at about thirty weeks I developed the gestational diabetes. With my son I was very sick, vomiting, went to hospital and I didn't eat much sugar and I didn't have it with him.

When in my third trimester when they diagnosed me with the diabetes obviously your diet becomes very restricted and you have to be very careful about snacking and actually in the five weeks before she was born when my diet changed a lot I felt much better I had more energy and it made a big difference. I often think now if my diet is bad when I eat terrible things and I need energy I often try and remember the diet I was on and how I was very careful with my sugar intake and what I could have and what I couldn't have because I did feel better at that time.

8. **Could you please tell me if you were given any information on any lifestyle changes after pregnancy?**

   No and I don't know if it was because already my diet is reasonably okay, I'm not overweight, I was already leading a reasonable lifestyle. I think maybe if I had been very overweight and was smoking and other things maybe they would have given me more. Everyone was so surprised when they met me that I wasn't typical of the usual people that have gestational diabetes. I was very good for the five weeks. Nobody offered any advice as there wasn't much I could really change.

9. **What do you understand about a healthy lifestyle?**

   For me it is taking some exercise every week, I try to go to the gym two times a week. I am busy with the children anyway never really sitting down. For me eating is something I love to do and if I am trying really hard to curb my eating I will cut out sugar is quite important and I am very aware because of the diabetes that I am at higher risk. I try to keep the processed sugar to a minimum if possible. I think I eat a normal diet. We eat fresh fruit and vegetables in the week but also have takeaways and eat out. I wouldn't say I'm particularly healthy but I am not on the far scale.

10. **As you have mentioned that you were at high risk how did you know?**

    I knew I was at higher risk once I had the diabetes. I didn't know I was high risk before, I assumed I would never be at high risk. After I had the diabetes a few different sources, a friend and few of the nurses told me that my family background puts me at higher risk. My mother is ¾ Chinese and I have been told that people with Asian DNA are at higher risk than a white British person. I met some of my mums family at an event and we were talking about my diabetes and she said that she had it too and because she is Chinese they tested her anyway just because of her ethnic origin. It was after that I understood that I was probably at a higher risk because of my ethnic background but previous to that I had never heard that.

11. **What was your lifestyle before your pregnancy and did you make any changes to that lifestyle?**

Probably before both of my pregnancies it was much easier for me to look after myself I could go to the gym more or go out walking, it was easier to eat better because you can cook what you want.
With the children around and having had both of my pregnancies as I said I was very unwell and my diet was terrible and I was exhausted so I didn't do exercise. My eating was anything I could stomach and a very small amount, in my first pregnancy I actually lost weight for the first two trimesters because I was vomiting so much so probably now my lifestyle is very similar to before, it is much easier because my children are five and three they are a bit older they eat most of everything but when they were much younger it was much harder to maintain what I would see as a healthier lifestyle. They were eating well with lots of pureed vegetables and fruit etc but then when I am trying to look after them and do something for myself it is easier just to eat quickly and I never had time to go to the gym. I was at home with the children until both of them were three. As the children have gotten older I think I would say my lifestyle is the same or similar to before I had my children.

12. **What health advice would you give to a friend who has been diagnosed with having gestational diabetes?**

I guess the same advice I had really. You have to very carefully watch what you're eating and for me it meant looking at things that I would normally eat and realising it has a lot of sugar but I didn't realise that it had sugar or carbohydrates or high in certain sugars. The diet for me was the most important thing more than the exercise. In my pregnancy particularly towards the end it was very hard to exercise. Actually to look at the ingredients of foods on lots of things that I would class as healthy like bread it had some sugar in it and carbohydrates and you have to be careful how much bread you eat and little things like that. For me it was probably more important that exercise. At The Women's Hospital they gave me some very good leaflets and they had very simple breakdowns such as I could have a snack around certain times and they would list healthy foods. I would advise a friend to obtain one of those leaflets.

13. **What do you know about the risk of developing diabetes after gestational diabetes and how can you avoid it? Have you been given any information about it?**

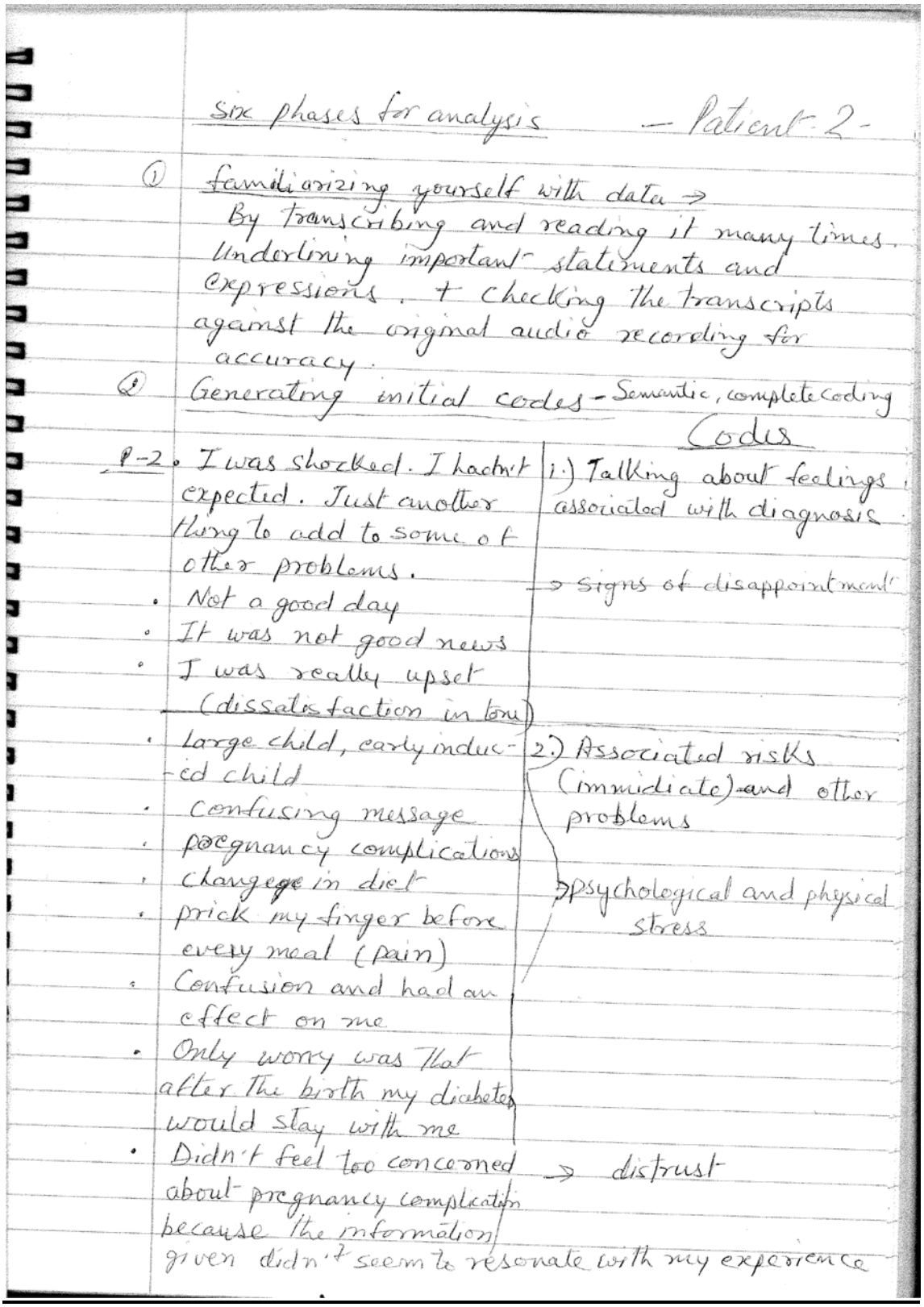
I don't know much. I know that I am higher risk. I don't know what percentage that higher risk is, I don't know if it is a lot. Nobody really has told me if I should change my diet significantly now to prevent it or if there are things that I should be doing people. At the hospital they said I didn't have it anymore but nothing further. I've never been told that I need to change my lifestyle just that in the future I am at higher risk of getting it but I don't know any other information other than that.

14. **Have you changed your lifestyle since then?(She didn't look sure so a follow up prompt) You have mentioned that you think you had a healthy**

lifestyle anyway so you don't need any change. Would you say you have changed or is it the same as before?

I haven't made any changes as a result of having it. The changes have come because my children have got older and it is easier for me to go out and exercise, it is easier to cook a meal for everybody, one meal that everybody can eat that is reasonably healthy without having to think one thing for them and one thing for another.
I've not changed anything at all as a result of the diabetes but definitely if there had been other factors I would. If somebody had given me more information and I was more aware possibly I would make other changes but I have not had that information so I am just carrying on as normal.

Sample data analysis

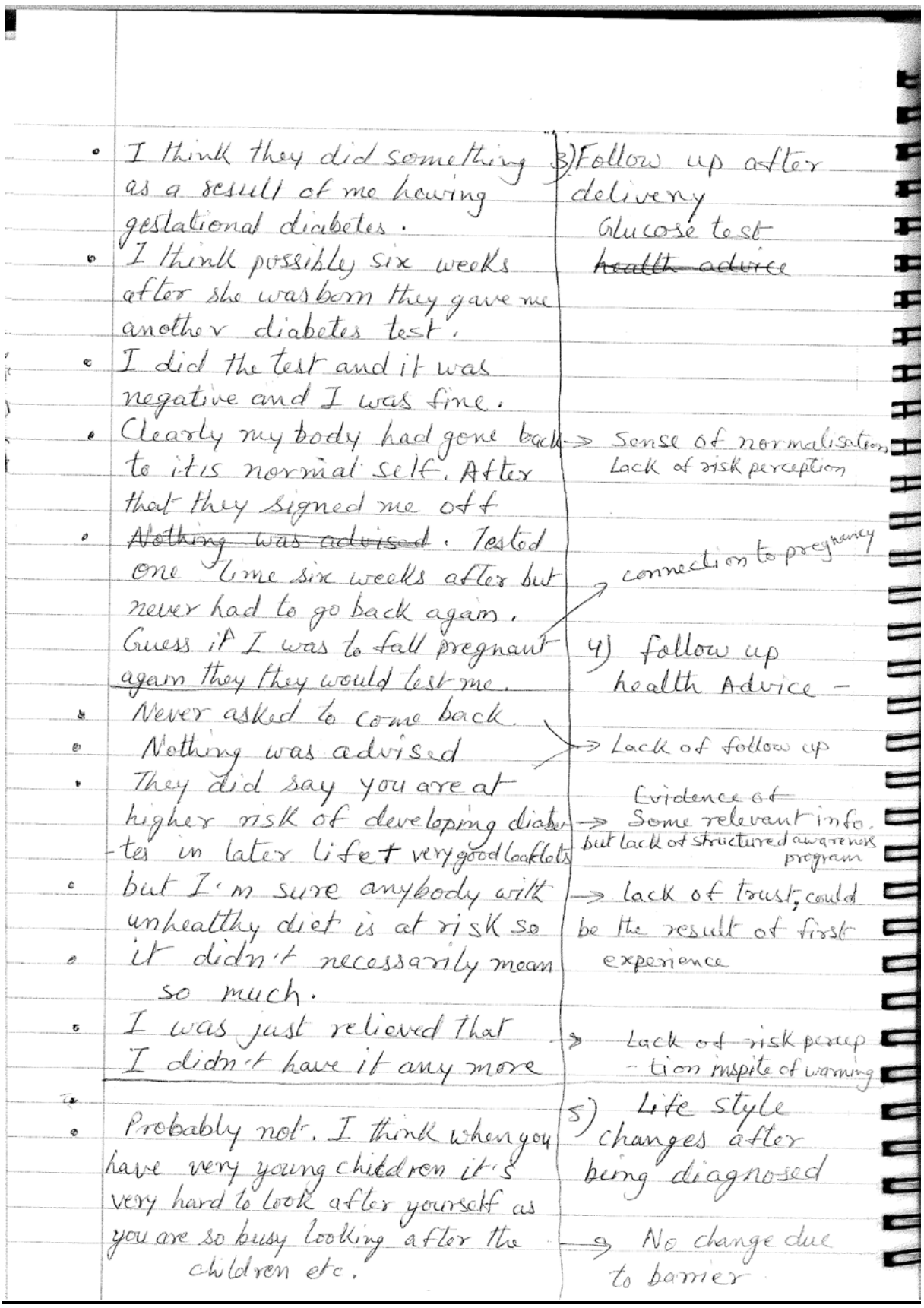


Six phases for analysis — Patient 2 -

① familiarizing yourself with data → By transcribing and reading it many times. Underlining important statements and expressions. + checking the transcripts against the original audio recording for accuracy.

② Generating initial codes - Semantic, complete coding

	Codes
P-2. I was shocked. I hadn't expected. Just another thing to add to some of other problems.	1.) Talking about feelings associated with diagnosis
• Not a good day	→ signs of disappointment
• It was not good news	
• I was really upset (dissatisfaction in tone)	
• Large child, early induced child	2.) Associated risks (immidiate) and other problems
• Confusing message	
• pregnancy complications	
• Changege in diet	→ psychological and physical stress
• prick my finger before every meal (pain)	
• Confusion and had an effect on me	
• Only worry was that after the birth my diabetes would stay with me	
• Didn't feel too concerned about pregnancy complication because the information given didn't seem to resonate with my experience	→ distrust



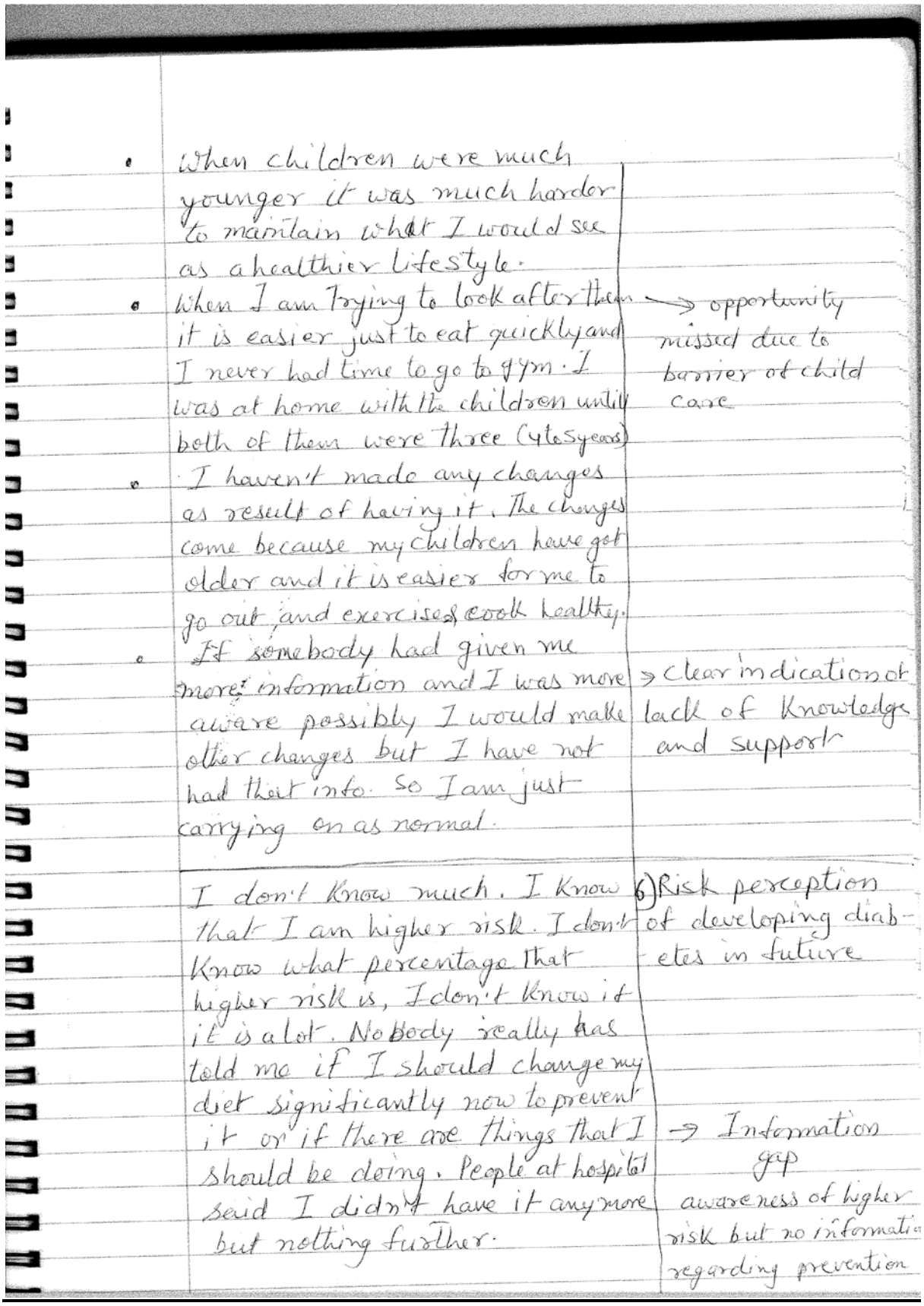
- I think they did something as a result of me having gestational diabetes.
- I think possibly six weeks after she was born they gave me another diabetes test.
- I did the test and it was negative and I was fine.
- Clearly my body had gone back to it is normal self. After that they signed me off → Sense of normalisation, Lack of risk perception
- ~~Nothing was advised~~. Tested one time six weeks after but never had to go back again. Guess if I was to fall pregnant again they they would test me. → connection to pregnancy
- Never asked to come back
- Nothing was advised → Lack of follow up
- They did say you are at higher risk of developing diabetes in later life + very good leaflets → Some relevant info. but lack of structured awareness program
- but I'm sure anybody with unhealthy diet is at risk so → lack of trust, could be the result of first experience
- it didn't necessarily mean so much.
- I was just relieved that I didn't have it any more → Lack of risk perception inspite of warning
- Probably not. I think when you have very young children it's very hard to look after yourself as you are so busy looking after the children etc. → No change due to barrier

3) Follow up after delivery
Glucose test
~~Health advice~~

4) follow up
health Advice –

Evidence of

5) Life style changes after being diagnosed



- When children were much younger it was much harder to maintain what I would see as a healthier lifestyle.
- When I am trying to look after them it is easier just to eat quickly and I never had time to go to gym. I was at home with the children until both of them were three (4 to 5 years) → opportunity missed due to barrier of child care
- I haven't made any changes as result of having it. The changes come because my children have got older and it is easier for me to go out and exercise & cook healthy.
- If somebody had given me more information and I was more aware possibly I would make other changes but I have not had that info. So I am just carrying on as normal. → clear indication of lack of knowledge and support

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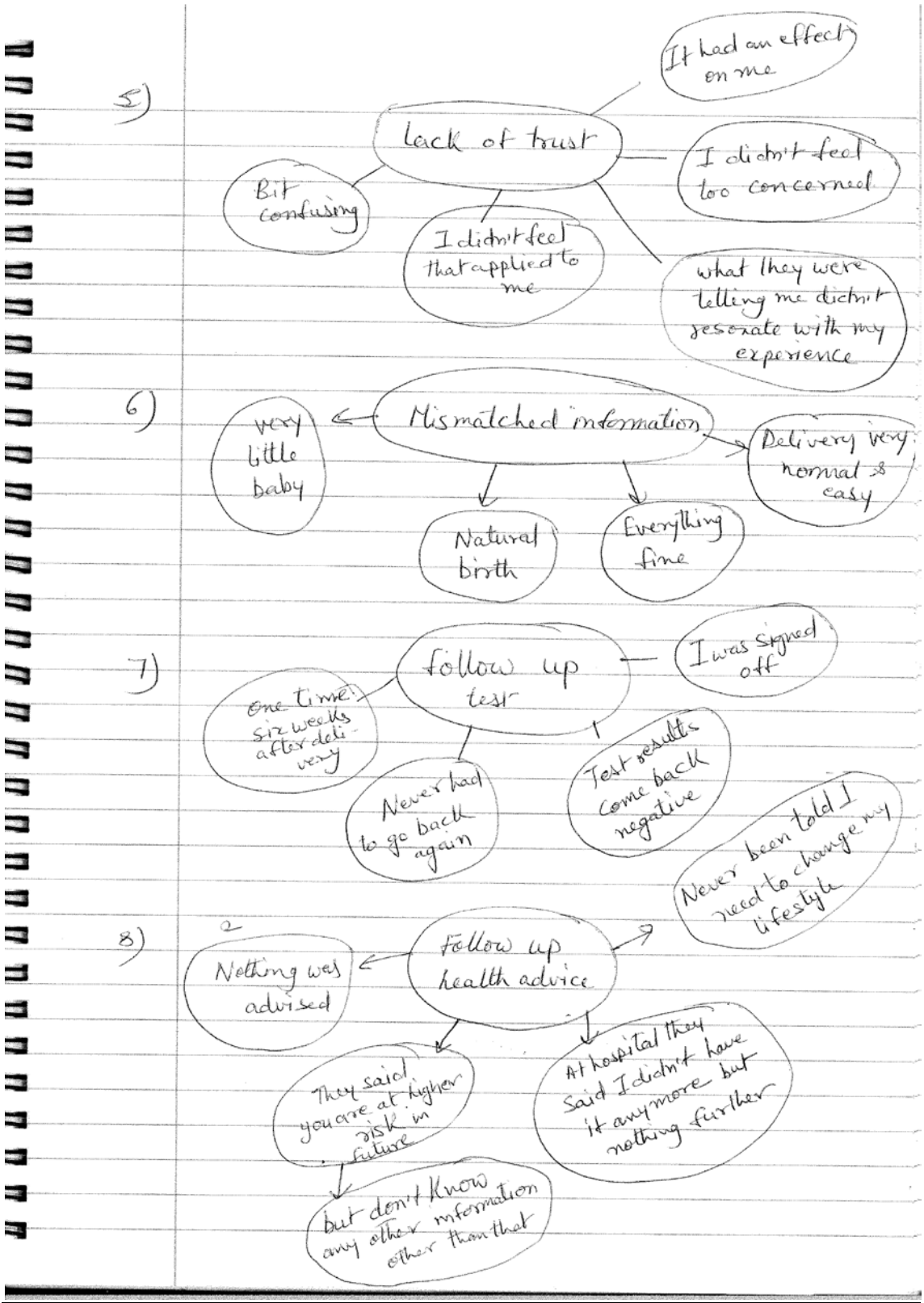
I don't know much. I know that I am higher risk. I don't know what percentage that higher risk is, I don't know if it is a lot. Nobody really has told me if I should change my diet significantly now to prevent it or if there are things that I should be doing. People at hospital said I didn't have it anymore but nothing further.

6) Risk perception of developing diabetes in future

→ Information gap awareness of higher risk but no information regarding prevention


Initial thematic map
1
Negative feelings
Not a good news
Really upset
not a good day
Shocked
I hadn't expected
quite sad
2
Awareness of immidiate risks
I didn't Know what the risks were?
Changed my diet
prick my finger before every meal
Risks of complications at the end of my pregnancy
bit Confusing
I didn't feel that applied to me
Very large baby
Early induction
3
Physical stress
Appointment every week
Change my diet
large beby
prick my finger before every meal
complications of pregnancy
4
Mental stress
Didn't resonate with my experience
No under standing
bit confusing
Complications at the end of pregnancy


5)
Lack of trust
It had an effect on me
I didn't feel too concerned
Bit confusing
I didn't feel that applied to me
what they were telling me didn't resonate with my experience
6)
Mismatched information
very little baby
Delivery very normal & easy
Natural birth
Everything fine
7)
follow up test
I was signed off
one time: six weeks after delivery
Never had to go back again
Test results come back negative
Never been told I need to change my lifestyle
8)
2
Nothing was advised
Follow up health advice
They said you are at higher risk in future
At hospital they said I didn't have it anymore but nothing further
but don't know any other information other than that

- All the risk warnings were very short- not explained properly and more about immediate pregnancy related risks.
- The only worry patient had was about diabetes staying after pregnancy.
- Once she was checked after pregnancy and declared negative (no diabetes) she was relaxed

① quote "I was. - - - - - normal self"

② "They told me - - - - any more".
Glucose test -

③ "I am not - - - - come back"
NICE guideline have no relevance if they are not communicated to the patients.

④ ~~child~~ child care a barrier in Life style Change
- "I think - - - - after children"

Semantic Coding

- Very Concerned
- Worried
- Really upset
- Shocked
- hadn't expected
- quite sad
- not a good day
- not good news
- Misdiagnosed
- Bit cheated
- Really, really upset
- Okay after a while
- Devastated
- Complete Surprize to me
- Shock lasted for a while
- felt disappointed
- personal insult
- wasn't a pleasurable experience
- stressful
- burst into tears
- quite disappointed really

feelings associated with the diagnosis patient 1 to 7

Theme 1 – Feelings associated to diagnosis of GO

Appendix -E

Supervision meeting - 16th September 2015

(Wednesday 11.30 am)

Action Points

In yesterday's dissertation supervision meeting the major suggested actions were to -

- Make an optimal use of collected data and add some more interview dialogues from the scripts. It was recommended to mention the interview- time (data collection) and script length to evidence the richness of data. To let the data speak for it-self rather than trying to force it in a particular story.
- The second suggestion was to be more innovative and use soft titles for the themes. It was further advised to extract more colloquial titles from the dialogues. This was followed by advice to make the theme titles soft (less rigid) and acquire a natural flow in writing.
- Another recommendation was to add limitations and strengths of this study in discussions. Limitations and strengths were briefly discussed.
- We discussed a word count limit. It was suggested that I edit the introduction and literature review to reduce the word count in order to add some more interview data in results. The revised estimated word count is suggested to be around 1000 words for introduction, between 1000 to 2000 words for literature review, and approximately 2000 words for methods. Due to the addition in the interview, it was recommended for data results to have an increased word count of up to 6000 to 8000 words and discussions around 2000 words. Finally, the conclusion is going to be approximately 800 to 1000 words.
- A requirement for a few weeks' extension to finish the dissertation project was agreed to. The form was collected from the office. It has to be filled, signed and submitted before the submission deadline.
- Two weeks time was planned for amendments to the results. Finally, we decided to arrange another supervision meeting in two weeks time for a feedback on results and discussions.

Supervision meeting record - 30th September 2015

(Wednesday 9.30 am)

Action Points

In the supervision meeting on 30th of September Lynne went through the results and discussions chapter and made following suggestions:

- In the results section Lynne suggested to add word count for transcripts. Incorporation of some more details and elaboration of personal comments to allow interview data flow naturally and read more comprehensively.
- In the discussions, it was advised to avoid using confirmative statements. Instead, it was recommended to make suggestions supported by findings. To remember and acknowledge the limitations of this research (conducted in a local hospital recruiting small number of patients). The findings might not necessarily represent a general practice all over the UK.
- To critically evaluate all papers reviewed in literature review and also in discussion; not uncritically accept recommended practice from elsewhere without consideration from other contexts or for limitations in study design; examine the example of Australian National GD register before presenting or recommending it as a good practice.
- Finally, to re-write the last paragraph with a clear description of strengths such as new findings or clear understanding of participants' perceptions.

My reflection on patient recruitment

Recruitment was a long and strenuous process. It took around four months (November 2014 to March 2015) to recruit a sufficient number of patients for the interviews. Following Silverman's (2005) suggestion, great attention was paid to the ethical issues involved. Recruitment process was only initiated after the NHS Research Ethics Committee (REC, Hampshire B) and NHS Research and Development offices (R&D, Royal Liverpool Hospital) gave their final approval. The diabetes team at the Royal Liverpool Hospital co-operated and supported me throughout the recruitment and interviews. It would have been impossible to recruit patients without their support. Due to the limitations of confidentiality and ethics, the researcher was not allowed to access the patient information or contact patients without their permission. Therefore, a member of the patient's clinical care team (antenatal diabetes care team at Royal Liverpool University Hospital) accessed the patient records in order to identify potential participants and check if they met the inclusion criteria. Women who were pregnant at the time of recruitment or were diagnosed to have Type 2 diabetes mellitus were excluded from the study .

A total of 50 English speaking women, living in the Merseyside area, aged between 18 to 40 years (at the time of pregnancy) with a previous history of gestational diabetes mellitus were selected. These women had attended an antenatal diabetes clinic at Liverpool Women's Hospital after 1st April 2008 and before 31st March 2012. The decision was made to contact the first 30 patients and wait for their response and keep the rest remaining 20 patients records safe as a contingency plan in case of an unexpectedly low response from patients.

The University of Chester kindly provided seven £10 vouchers to be given to the participants as a token of thanks for their participation and this was mentioned in the invitation letters.

The first obstacle was to contact the patients' GPs to check the well being of the mother and their offspring before contacting the participants themselves. The researcher was not allowed to get involved until patients permission was granted. Therefore, contacting GPs to confirm 30 patients' wellbeing was a challenge. Patients were living in different areas so there were more than 10 surgeries to be contacted. The Royal Liverpool Hospital is a very busy health organisation and all of the diabetes team had an enormous work load. Therefore, sparing time to contact GPs was an extra burden for them. However, in spite of their busy schedule Dr Purewal's diabetes team was very supportive. A letter was typed and sent to GPs and then a diabetes team member had to call individual surgeries to confirm the wellbeing of each mother and their offspring. 8 out of 30 patients could not be located. They either had moved somewhere else or had developed diabetes. This whole process took around one month's time. Once their well being was confirmed, invitation letters, information sheets and permission slips were sent out to the remaining 22 patients by the diabetes department. These letters were sent to attain permission from the potential participants for the researcher to contact them for recruitment.

Participants were provided a self addressed prepaid envelop to send their reply in two weeks time. Only two permission slips were received initially so a reminder was sent to the participant whose response was not received in two weeks time**.**

After few weeks of waiting I was starting to lose hope. However, we had a list of 20 more patients to contact but starting the whole process again and contacting GP surgeries seemed like "mission impossible"'.

There was a time around 2015 February when I thought that I would not be able to take this research any further as I could not recruit enough patients for the interviews. However, my determination to complete my project was very strong so I asked for advice from my academic supervisors Dr Fallows and Professor Kennedy. They both encouraged me to keep trying and suggested that I contact the REC committee and ask for permission to go to patients' houses for the interviews at their convenience. We all realised that child care responsibilities and time constrains were becoming barriers in participation and we were not in the position to provide childcare to our participants. When I called ethics for permission I was told that I would have to go through the IRAS system again to get their approval. This sounded dreadful as it could have taken a very long time to go through the process again.

Fortunately, some more late positive replies arrived in the following weeks. A total of nine permission slips were returned and I managed to recruit enough participants for qualitative interviews. During the pre interview briefing conversation, two patients were found to have been diagnosed with diabetes recently and were excluded and the remaining seven patients were included in the study. Seven participants were considered to be a satisfactory number for the purpose of effective data analysis because the qualitative research designs work with relatively small numbers (Silverman, 2005).

Morse (2015) suggests an inverse relationship between the numbers of participants and amount of data collected from each participant. Following the

suggestion small numbers of participants were considered enough to collect rich data, through open ended questions. I planned to stop the Interviews at the point of data saturation (Marshall, 1996; Rubin & Rubin, 1995) after new themes would stop emerging. Otherwise, the 20 saved patient records were kept aside to be used to recruit more patients if required.

I worked under the constant supervision of my academic and clinical supervisors. We had supervision meetings almost every month and regular contact through emails and phone calls throughout the recruitment process.

I tried to keep the interview process as flexible as possible to suit participants' convenience. It took me another three months to interview all seven participants. The participants were provided plenty of time to think and decide about their willingness to participate in the study. After recruitment, participants were asked again for verbal consent before starting the interview and it was clarified that if they wished they could withdraw at any point during the interview (Silverman, 2005). Arrangements were made to resume interviews at times more suitable and convenient for the participants, considering that childcare and other commitments of mothers with young children could be a barrier for participation (Ritchie & Lewis, 2006). A room was booked specifically for the purpose of interviews.

The consent forms were signed before the commencement of the interviews. The pre interview guide mentioned that the information collected during the course of the interview would be kept strictly confidential and anonymous. Participants will not be identified in any subsequent report or publication (Silverman, 2005).

Lessons learned for future research

The most important lesson learnt was that if the recruiting participants are mothers of young children, it is wise to either offer them childcare or conduct the interviews at their homes. The second lesson learned was to plan a realistic schedule to complete a research project because factors such as access to patient records or patient recruitment could be sometimes beyond researcher's control especially if she/he is not an employee on the research site.